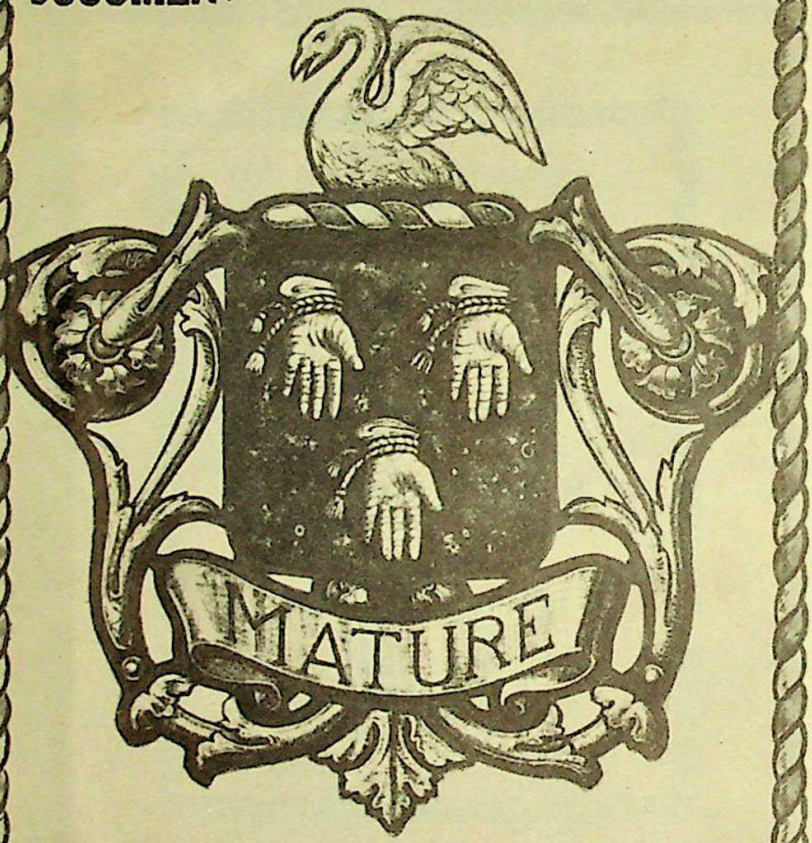
JOCUMENT



LINDA HALL LIBRARY
KANSAS CITY, MISSOURI

PATENTS FOR INVENTIONS.

ABRIDGMENTS

OF

Specifications

RELATING TO

POTTERY.

PART II.—A.D. 1862–1866.

PRINTED BY ORDER OF THE COMMISSIONERS OF PATENTS.

LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.
PUBLISHED AT THE
OFFICE OF THE COMMISSIONERS OF PATENTS FOR INVENTIONS
25, SOUTHAMPTON BUILDINGS, HOLBORN.

[*Price 6d.*] 1870.

PATENTS FOR INVENTIONS.

ABRIDGMENTS

OF

Specifications

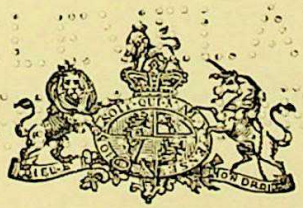
RELATING TO

POTTERY.

PART II.—A.D. 1862–1866.

24

PRINTED BY ORDER OF THE COMMISSIONERS OF PATENTS.



LONDON:
PRINTED BY GEORGE E. EYRE AND WILLIAM SPOTTISWOODE,
PRINTERS TO THE QUEEN'S MOST EXCELLENT MAJESTY.

PUBLISHED AT THE
OFFICE OF THE COMMISSIONERS OF PATENTS FOR INVENTIONS,
25, SOUTHAMPTON BUILDINGS, HOLBORN.

1870.

THE CLEVELAND PUBLIC LIBRARY

THIS BOOK IS NO LONGER THE PROPERTY
OF THE CLEVELAND PUBLIC LIBRARY

PREFACE.

The Indexes to Patents are now so numerous and costly as to render their purchase inconvenient to a large number of inventors and others, to whom they have become indispensable.

To obviate this difficulty, short abstracts or abridgments of the Specifications of Patents under each head of Invention have been prepared for publication separately, and so arranged as to form at once a Chronological, Alphabetical, Subject-matter, and Reference Index to the class to which they relate. As these publications do not supersede the necessity for consulting the Specifications, the prices at which the printed copies of the latter are sold have been added.

The number of Specifications from the earliest period to the end of the year 1866 amounts to 59,222. A large proportion of the Specifications enrolled under the old law, previous to 1852, embrace several distinct inventions, and many of those filed under the new law of 1852 indicate various applications of the single invention to which the Patent is limited. Considering, therefore, the large number of inventions and applications of inventions to be separately dealt with, it cannot be doubted that several properly belonging to the group which forms the subject of this volume have been overlooked. In the progress of the whole work such omissions will, from time to time, become apparent, and be supplied in second or supplemental editions.

This volume contains Abridgments of Specifications to the end of the year 1866. From that date the Abridgments have not been published in classes, but will be found in chronological order in the quarterly volumes of the "Chronological and Descriptive Index" (*see* List of Works at the end of this book). It is intended, however, to publish these Abridgments in classes as soon as the Abridgments of all the Specifications from the earliest period to the end of 1866 have appeared in a classified form. Until that takes place, the reader (by the aid of the Subject-matter Index for each year) can continue his examination of the Abridgments relating to the subject of his search in the Chronological and Descriptive Index.

In this series of Abridgments, under the title "Pottery," are comprised the inventions which relate to the preparing of the various materials employed in the manufacture of earthenware, stoneware, porcelain, and other ceramic wares, likewise the machinery and methods of manipulation adopted throughout the various branches of the manufacture; together with the processes for enamelling, glazing, painting, printing, drying, burning, and otherwise finishing the same. The series also includes the application to various purposes of the materials employed in the above manufacture.

The Abridgments marked thus (* *) in the following pages were prepared for another series or class, and have been transferred therefrom to this volume.

B. WOODCROFT.

June, 1870.

INDEX OF NAMES.

[The names printed in *Italic* are those of the persons by whom the inventions have been communicated to the Applicants for Letters Patent.]

Page

Armstrong, R. W.....59, 65
Ashton, R. H.....68
Atterbury, J. H.....74
Avet, C. H......66

Baugh, B.....51
Béranger, A......71
Bevan, E.....65
Birkbeck, G. H.....7, 9
Boetius, H.....14
Boote, R.....49
Boote, T. L.....49
Bonneville, H. A.....71
Boulenger, H. A. C.....42
Boulton, W.....62, 64
Bourg, C. A. le.....7
Brooman, R. A., 5, 11, 24, 32, 58
Brown, G.....50
Brown, J. B.....70
Bührer, J......69
Buller, W.....20
Burq, V.....52

Campbell, C. M.....36
Chamberlain, H.....43
Carr, T.....77
Chrystal, W.....4
Cimeg, J.....13
Clark, W.....9, 25, 46
Clauss, L.....49
Cliff, J.....4, 37
Cochran, R.....42
Coignet Père et Fils et Companie, Société.....6
Cotterill, C. F.....70
Craig, J.....21

Page

Craig, M.....21
Craven, J.....43

Davis, J.....73
Dean, W.....54
Delabarre, C. F.....76
De Lavenant, C. B......32
Deshurand, E......9
Dodé, E......47
Du Motay, C. P. T......24
Duprat, V......38
Dupuy, J. T......11
Durant, F......28, 58
Dutfoy, R......25

Ellis, H.....15
Emery, F. J.....53

Feldtrappe, A. A......25
Fleming, A.....65
Ford, F.....33
Ford, L.....33
Forrester, J.....30

Gedge, W. E.....59
Gibson, W......60
Girdler, C. M.....55, 56
Gisborne, T. M.....41
Grainger, A.....55, 56
Greaves, G.....63
Gros, G......59
Grosjean, D......45

Hackney, N.....2
Hamel, C......69
Hamilton, J.....5
Hautecloque, P. D......9

Page
Hawthorne, J. 25
Hébert, L.....26
Henry, M....6, 66
Hess, R. H. 76
Hett, A....57
Hoffmann, F. E.....40, 43
Holdcroft, W. 63
Hughes, J. L....16, 31

Isaacs, E. 39

Jobson, R....64
Johnson, J. H. ...26, 31, 45, 47
Joseph, J. S. 3

Kramer, H. E....34
Kuhlmann, F. 46
Kuntsmann, R....72

Lake, W. R....61
Lavenant, C. B. de....32
Leak, E....35, 67
Le Boury, C. A.....7
Le Souef, D. C. 8
Lemercier, A.....9
Lindemann, G....18

Macintyre, J....27
Malpas, C....23
Mangin, V.....10
Marcher, R.....31
Maréchal, C. R.....5, 24
Markland, T....8
Martin, A.....71
Martins, C. A....7, 50
Maw, G....14
McAdam, W....4
McKenzie, G....5
Meakin, J....53
Miller, J....22
Motay, C. P. T. du....24
Mugford, J. H....20
Muir, J.....54
Murray, W. F....5, 12

Page
Nelson, E....18
Newton, A. V....40
Newton, W. E....60

Obernetter, J. B.....50
Oswald, E....17

Parkinson, J....29
Platt, J....14
Price, A. P....69
Prince, A....38

Ranson, G....19
Richardson, W....14
Robotham, T. J....2, 17

Scarratt, W....54
Schuberth, J.....8
Sharpe, E....20
Scrivener, R....39
Smith, W. H....56
Société Coignet Père et Fils et Compagnie....6
Struthers, W....22

Tessie du Motay, C. P.....5, 24
Tildesley, M....20
Turner, G. W....61

Walker, A. B....73
Warren, T....29
Wedekind, H....43
Wathins, W. B.....61
Wilkinson, W....1
Wilson, E. B....34
Wood, J....63
Woodbury, W. B....48
Woolf, S....37, 74
Worssam, G. J....6, 41
Worthington, J....9, 62, 64
Wright, J....54

Yapp, G. W....10

POTTERY.

POTTERY.

1862.

A.D. 1862, January 11.—N° 86.

WILKINSON, WILLIAM.—(*Provisional protection only.*—"Improvements in ornamenting and decorating metals, glass, porcelain, parchment, and other skins, and in the materials and ingredients employed therefor, also in protecting silver and gold on said materials, and on surfaces of plates of glass or metal, or plates of glass and metal combined, applicable to works of art, furniture, jewellery, and other articles of a useful and ornamental character." These are, the design is placed upon a sheet of glass (and supposing the design to be gilded or silvered)" the face is brushed "with a transparent cement" of "gum arabic, white wax, coloring matters, and linseed or olive oil, the proportions varying according to circumstances;" another sheet of glass of the same size is brushed over on one side with boiled or raw linseed oil, the design is placed on the prepared side of this sheet of glass and pressed, this done the back of the design is brushed over "with boiled or raw linseed or olive oil, which has the effect of rendering the picture visible on the back thereof." The margin of each sheet of glass is then coated with a strong opaque paint, which when dry, is coated with a cement "of white and red lead, Brunswick black, boiled oil, and copal varnish, or other suitable adhesive substances." The two sheets of glass are then connected together and the air excluded from them by gentle pressure. To protect designs on single sheets of glass employing an ordinary waterproof varish over the back of the design. Also in some cases the back of the design is silvered "after it has been rendered transparent as before stated,"

and coat the back of the silver with paint, or instead of silvering the back it is proposed "to employ polished sheet metal, tin "plate, for example," and the design is fixed to the metal instead of to the glass placed "in front, so that if broken the design will "not be destroyed." To protect silver on glass, as on looking glasses, it is covered with a strong cement, such as above, and covered with a waterproof fabric cemented to the back of the glass, which may be ornamented. Textile or woven fabrics or lace are stretched upon a sheet of glass fastened at their edges thereto by an opaque cement and another sheet of the same size of glass fastened over it as above. Perforated paper, parchment, &c. may be employed in the same manner. In ornamenting stems for lamps, glasses, glass tubing, bottles, stoppers, &c. the articles formed hollow are stained outside of any desired colour and the pattern or ornament is formed by removing parts of the color, silvering the inside and covering the same with a waterproof cement such as above.

[Printed, 4*d*. No Drawings.]

A.D. 1862, January 27.—N° 212. (* *)

ROBOTHAM, THOMAS JOHN, and HACKNEY, NATHAN.—(*Provisional protection only.*)—"Improvements in purifying slip, "glaze, and other potters' materials."

"Heretofore it has been proposed to purify slip, glaze, and "other potters' materials by passing them through a narrow "trough in which are placed a series of electro-magnets for the "purpose of extracting any iron or other magnetic substances "incorporated with the materials, but the apparatus has been so "arranged as to carry the slip, glaze, and other materials so "rapidly out of the province of the magnets, that the clearing "is but very imperfectly effected by them. Now our invention "consists in causing the slip, glaze, or other potters' materials "to pass through a box divided into compartments by partitions, "in one end of each of which partitions holes or passages are so "formed that the materials being fed into a compartment at one "end of the box, may pass successively through each of the "compartments, and the passages are formed at alternate ends of "the partitions, so that the materials are caused to pass from "end to end of each compartment, and the materials pass away "from the bottom of the last compartment through a pipe, in

" which is a tap to regulate the flow of the materials. In each " compartment are placed two or more ' horse-shoe ' electro- " magnets, and the magnets are placed so that their poles alter- " nate, and the magnets in all the compartments are worked " from one battery, the wires from like poles of the magnets " being all connected together."

[Printed, 4*d*. No Drawings.]

A.D. 1862, February 12.—N° 371. (* *)

JOSEPH, JOHN STEPHEN.—" Improvements in coke ovens, and " in utilizing the waste heat from the same." These are, first, " the construction of coke ovens having external chambers at the " top, and flues leading from these and surrounding the sides and " bottom of the oven into which the combustible gases enter, and " are there caused to undergo more or less complete combustion " by being brought into contact with jets of atmospheric air which " enter the said external chambers and flues, other jets of air " being also caused to enter the ovens themselves for the same " object." The jets of atmospheric air are introduced " through " small orifices in the brickwork," at suitable distances, into the " chambers, flues, or channels through which the gases pass."

Second. " The employment of the spare heat resulting from the " above-described combustion of gases " in the above coke ovens " for generating steam in boilers, for making illuminating gas in " retorts, for firing pottery, for heating drying stoves, for calcining " ores, and for burning lime."

[Printed, 8*d*. Drawing.]

A.D. 1862, February 13.—N° 376. (* *)

JOSEPH, JOHN STEPHEN.—"An improved retort oven, and " the utilization of the spare heat from the same." These are, first, "the construction of ovens for making coke, charcoal, or " other similar processes, by which combustible gases are dis- " engaged," of "such a transverse sectional form as to require " little or no support from the sides, and which are completely " surrounded, except at the ends, by a chamber in which the " gases proceeding from the interior of the ovens are caused to " undergo more or less complete combustion by the introduction " of a number of small jets of air into the said chamber, other jets " of air being also introduced into the ovens themselves," for

the purpose of causing a more or less complete combustion of the combustible gases. The retort is "of a catenary, parabolic, or "elliptic transverse sectional form," but it may be of "any transverse sectional form that will stand firmly by itself, without "requiring any material support for the sides."

Second. "The employment of the spare heat generated by the "combustion of the combustible gases" in the above oven, "for "making illuminating gas, for heating drying stoves, for firing "pottery, for calcining ores, or for burning bricks or lime."

[Printed, 8*d*. Drawing.]

A.D. 1862, February 21.—N° 467.

McADAM, WILLIAM, and CHRYSTAL, WILLIAM.—"Improve-"ments in sheaves or pulleys, journals, bushes, and other similar "bearing or rubbing surfaces." These are, "the application and "use of vitrified ironstone ware, earthenware, china, porcelain, "and glass to and in the manufacture of sheaves, pulleys, journals, "bushes, bearings, castors, and other generally similar bearing or "rubbing surfaces." In making sheaves or pulleys they are thrown, dried, turned, and fired or shaped in a mould and subsequently fired. Vitrified ironstone ware is preferred. "Sheaves "or pulleys formed of the china or porcelain clays, or of glass "may in some cases be made with a groove in the sides" to "receive a ring of leather, gutta percha, india-rubber, wood, or "other suitable material." The rings should project slightly.

[Printed, 4*d*. No Drawings.]

A.D. 1862, February 26.—N° 524.

CLIFF, JOHN.—"Improvements in glazing stoneware, red clay-"ware, porcelain, and other kinds of earthenware." These are, "glazing earthenware in furnaces or ovens heated by gas to the "proper temperature for decomposing the glazing materials "introduced or applied to the goods," thus "generating heat "without deposition of ash or dust on the goods." "When such "furnace is sufficiently heated common salt, metals, salts, or "other glazing materials or agents may be applied" by scattering among the goods in the ordinary manner, or "if more convenient "the gases, fumes, or vapours, may be generated in separate "producers or furnaces and the resulting products conveyed by

" flues or pipes into the furnaces and amongst the goods to be " glazed."

[Printed, 4*d*. No Drawings.]

A.D. 1862, February 28.—N° 548.

McKENZIE, GEORGE, MURRAY, WILLAM FULLARTON, and HAMILTON, JOHN.—(*Provisional protection only.*)—" Im- " provements in machinery or apparatus for the manufacture of " bobbins or holders for textile materials." These are, in a suitable framing are two steel dies " shaped to form the barrel " part and the bevelled ends forming the inner portions of the " end discs." These dies " have a transverse reciprocating " movement imparted to them by means of cams arranged on a " shaft below or other equivalent mechanical arrangement for " imparting a to-and-fro motion to the dies which traverse in " suitable guides. The ends of the bobbins are formed by a " pair of dies which move in a longitudinal direction or at right " angles to the first pair." These dies are moved by cams or otherwise. In operation " the dies are moved asunder and a " 'dod' or cylindrical piece of clay descends from a feeding tube " or hopper arranged above the dies. At the same instant the " rotary movement of the cams causes the dies to close up and " compress the dod to the form of the bobbin. Immediately " following this operation a spindle to which an intermittant " motion is communicated from the main shaft or other moving " part of the machine is brought forward and passes through the " 'dod,'" thus forming the central tubular aperture. The dies move back to discharge the bobbins which are afterwards fired and glazed.

[Printed, 4*d*. No Drawings.]

A.D. 1862, March 19.—N° 767.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Charles Raphaël Maréchal and Cyprien Marie Tessié du Motay.*)—" Improvements in printing and painting upon glass and ceramic " wares, and upon metallic and mineral substances, also in the " preparation of inks and colours for printing and painting." These are, first, the design is printed upon paper in fat ink and transferred to glass; this is called the reserve; metallic oxides or silicates are mixed up with a solution of gum, dextrine, or other

substance capable of adhering to glass, and this painted on the reserve and desiccated. The fatty reserve is next dissolved either in sulphuret of carbon, &c., in which the gum, &c. is insoluble, leaving with it the metallic oxides or silicates when the glass is fired.

Second, the reserve is soluble in water, and the metallic colours are mixed with fatty or resinous bodies, so that a similar result is attained by simply reversing the substances employed.

Third, printing a design upon "paper in a fatty ink containing "combined with it oxides, carbonates, alumino-silicates, or alka- "lino-terrous sulphates, earthy or metallic, and little or not at "all vitrifiable at the temperature at which glass fuses;" this "is transformed to glass, and forms the reserve." In the hollow and interstices of this reserve applying, "either in a damp or in "a dry state, vitrifiable metallic oxides or colours, which are "intended to reproduce the design printed," firing, cooling, and brushing away "the non-vitrifiable bodies which have acted as "the reserve."

Fourth, this process "is the counterpart of the third, in that "the reserve is in thin ink instead of in a fatty ink."

The colouring matters and inks are prepared as follows:— "borates, silicates, and phosphates of soda, of lead, of potass, "and the alkalino-terrous and alkalino-metallic borates, silicates, "and phosphates," are combined by boiling with "acid fatty "bodies, acid resins, or mixtures of such" until they are combined into a soap. "The combination may be performed under "heat without the pressure of water." This composition is mixed in various proportions with each enamel or colour to be vitrified. To complete the preparation of the matter for painting, and the inks for printing, the mixtures before named are ground and brought to the necessary consistency by the addition of "essential oils, hydrocarburets, solutions of resin in essences," or "oils of resin or of gallipot."

[Printed, 4*d*. No Drawings.]

A.D. 1862, March 22.—N° 807.

HENRY, MICHAEL.—(*A communication from the Société Coignet Père et Fils et Compagnie.*)—"Improvements in kilns, ovens, and "furnaces." These are, first, the employment in kilns or ovens "of a sole or floor directly or nearly directly under which furnaces "or fire-places are placed, and through which sole or floor nume-

" rous openings are formed for the passage of flames and products " of combustion from the fires into the kiln or oven." Other openings for the escape of the gaseous products may be made to the chimney or elsewhere.

Second, " the arrangement for cooling kilns and ovens in which " openings with moveable covers are formed in the sides and roof " for the passage of air."

Third, a receiver containing matters to be heated rests on an arch extending over the fire. The hot gases rise from the fire through one or more flues at each corner of the apparatus, and pass into (and to the top of) a flue, oven, or chamber which surrounds the receiver; from thence they escape at the top. The fire-place and ash pit are closed by plates, but are fitted with valves, cocks, or other contrivances for controlling the flow of air, and thus regulate the draft.

Fourth, an arrangement in which air may be forced into the furnace above and below the fire-bars. The hot gases are conducted into the kiln or oven in such manner as to enter it at the upper part called the " main chamber." A valve, register, damper, or similar contrivance is fitted in the passage, so that the hot gases pass out under a pressure slightly exceeding the external pressure. The hot gases in escaping pass through a hopper, feed box, or receiver containing the charge to be fed into the main chamber.

[Printed, 1*s.* 6*d.* Drawings.]

A.D. 1862, March 27.—N° 860.

BIRKBECK, George Henry.—(*A communication from Charles Auguste le Bourg.*)—" Improvements in the means of producing " imitation mosaics." These are, as follows:—" The model of " the design is first executed in paper or other suitable material " of the exact size, and colored to give an idea of the general " effect ultimately required. This model design is then carefully " cut up into sections of varying size suited to the character, and " following exactly the contour of the various parts of the design, " and there may be a considerable number of these parts or " pieces according to the size and character of the subject or de- " sign." These several parts or sections " are then placed sepa- " rately on plates or surfaces of baked or unbaked earthenware, " metal, or other substance suitable for enamelling upon, which " is then cut or shaped to the exact contour or shape of the par-

" ticular part of the design under treatment." The parts are all fitted exactly together. " The various parts are then covered with " enamel either separately or combined, the enamel being so ap- " plied to each part as to produce when 'fired' or baked the " various colours required in the complete design." " When " baked, the parts are to be combined and cemented or secured " together in any suitable or convenient manner." In producing " a model sculptured in bas-relief, the sections are to be made in " the plaster mould, or in the mould made of dry sand, according " to whether it be an original work, or one required to be re- " produced. The several parts or sections thus made, after being " baked, will be enamelled and put together as above explained."

[Printed, 4*d*. No Drawings.]

A.D. 1862, April 26.—N° 1225.

LE SOUËF, DUDLEY CHARLES.—(*A communication from John Schuberth.*)—(*Provisional protection only.*)—" An improvement in " the manufacture of nails, bolts, rivets, screws, eyes, and split " keys or pins." This consists in making the head of the above articles " of porcelain or any other kind of earthenware, and when " partially dried a hole is made in such head to admit the shank " or other part of the nail, bolt, rivet, screw, eye, or split key, or " pin, which is further fixed to the head by means of a cement " composed of quicklime, white of egg, and slack lime."

[Printed, 4*d*. No Drawings.]

A.D. 1862, May 7.—N° 1361.

MARKLAND, THOMAS.—" Certain improvements in wearing " apparel." These are, " the employment and use of china clay " or other similar and suitable composition as a beading for " preserving or ornamenting wearing apparel, together with the " peculiar construction of such beading " for preserving the edges, such as of " collars, facings, and the brims of hats." The beading is " grooved or slotted longitudinally to receive the edge " to be ornamented, and formed in a curved or other shape, and " of one or more pieces to suit the article to which it is to be " applied," so as " to yield without breaking, which otherwise " might occur were it in one continuous length or piece." " In " some instances (as for example) when employed as collars for " the neck, a broad tape may be employed, which has been pre-

" viously prepared for the purpose, by having a cord or enlarged " selvage formed upon one edge, by means of which the beading " is effectually secured to the edge of the collar or tape, being " effectually slipped into the slot in the beading from the end " longitudinally, and a corresponding enlargement being formed " in the slot to receive the cord."

[Printed, 6*d*. Drawing.]

A.D. 1862, May 15.—N° 1469.

BIRKBECK, GEORGE HENRY.—(*A communication from Etienne Deshurand and Anais Lemercier.*)—" Improvements in apparatus " for consuming smoke." These are, " the grate or fire-bar sur- " face is formed with a hollow recess, by preference of a curved " or concave form, but it may be of conical or pyramidal, or other " suitable shape if desired, commencing from and in the ' dead " ' plate,' and inclined from the front upwards towards the back " of the furnace or fire-place. This hollow channel or passage is " prolonged outwards from the front of the furnace, forming a " conduit or conductor, and it is furnished with a receptacle " made of sheet iron, which receives and retains the fuel till " required to supply the fire," the fuel being pushed " and fed " into the furnace by means of a piston actuated by a screw or " otherwise. The unignited fuel as it is forced forward into the " furnace is " caused to pass underneath the ignited or incandes- " cent fuel, and, as the smoke and gases are generated, they " become ignited aud consumed ; the fuel, by the hollow or recess, " being conical or inclined is gradually distributed over the sur- " face of the fire-bars. In larger furnaces two or more feeding " channels or passages, and apparatus to force and conduct the " fuel into the furnaces may be employed if required." Such apparatus, it is said, " will be found highly advantageous in its " application to furnaces for baking earthenware " and porcelain, and " may be readily adapted to boiler and other furnaces for " metallurgical or other purposes."

[Printed, 8*d*. Drawing.]

A.D. 1862, June 17.—N° 1794.

CLARK, WILLIAM.—(*A communication from Pierre Denis Haute-cloque.*)—" Improvements in the manufacture of buttons and " in apparatus for the same." These are, " the manufacture

" of buttons of porcelain, bone, india-rubber, and all other sub-
" stances capable of being moulded and stamped either in a
" heated or cold state, and whether in a soft paste or dry and
" pulverized, or in a mass. These buttons are furnished with a
" bar or bridge piece contained within the button itself, and of
" the same material, serving to secure the button in any desired
" position by passing thread round said bar. This bar may be
" formed with the button in various ways." By one method the button of ceramic material has a hole in the centre communicating with two openings on the under side of the button; the part left in the centre where two holes or channels are formed consists of a kind of bridge piece to which the thread is to be attached when fixing the button. Supposing the button is to be secured to a fabric, the thread is first connected to the fabric, and then by means of a needle passed through one of the two openings above and out at the centre hole, it is again returned through the centre hole, and passes out through the second opening above, so as to wind the thread round the bar. "This operation is repeated a
" sufficient number of times until the button is properly secured." These buttons may also be made "with one central hole, and
" three or four or other number of holes on the under side, the
" whole being in communication with the centre through hole, so
" as to form two, three, or more bridge pieces therein." Instead of making bridge pieces in the button itself they may be made in the shanks. The apparatus employed consists of two dies, one of which is fixed to the foundation plate, the other being moveable and worked by a lever or other press; the apparatus is also furnished with a matrix. "The shank buttons before described may
" be made without a hole in the top of a single piece in one opera-
" tion, or it may be made by two operations; for example, two or
" more similar parts of the button may be moulded separately
" and then fitted together. Again, the upper or external part of
" the button is made, and next the shank or under part the two
" parts are then united together and baked."

[Printed, 1*s.* 2*d.* Drawings.]

A.D. 1862, June 21.—N° 1829.

YAPP, GEORGE WAGSTAFF.—(*A communication from Victor Mangin.*)—(*Provisional protection not allowed.*)—" The reproduc-
" tion of the various colours and tints of chromo-lithographic im-
" pressions in glass, earthenware, china, and other bodies." This

is said to be, first, "the placing of the colours in such a manner "as to produce harmonious and brilliant tints, the addition or "suppression of certain colours, and the arrangement of such "colours according to their degree of fusibility."

Second, "the employment of a peculiar varnish which possesses "the property of preventing the blistering of the superposed "colours and of facilitating the operation of the work."

Third, "the employment of outline impressions in varnish in "such a manner as to produce perfect transfers."

Fourth, "the employment of an alloy mixed with gold so as to "produce a great saving in the precious metal without any way "detracting from its solidity and brilliancy."

[Printed, 4*d*. No Drawings.]

A.D. 1862, June 27.—N° 1888.

BROOMAN, Richard Archibald.—(*A communication from Jean Théodore Dupuy.*)—"A method or methods of preparing "paper for the reception of photographic pictures or impressions, "in order that the said pictures or impressions may be transferred "to and fixed on wood, porcelain, and other surfaces." This "consists as follows:—First take paper and if not sized cover it with size, starch, glycerine, or other sizing material" and immerse it in a solution "of ammoniacal citrate of iron and bichromate "of ammonia" and dry it in a dark chamber; or "the paper "may be prepared with the different salts of iron and chrome "with perchloride and lactate of iron, with potassic citrate of "iron or manganese, with pyrophosphate of iron, with potassic "or ammoniacal tartrate of iron, with bichromate and chromate "of ammonia or potass with the addition of gum, gelatine, sugar, "or albumen, or Judea bitumen developed in a solution of oil "of naptha and benzine."

Second, the paper prepared by one of the means above is printed" in an ordinary photographic printing frame."

Third, the impression is damped by exposure in a damp cellar, or by steam, breath, or any other suitable damping agent.

Fourth, the damp "condenses on those parts which have not "received the impression of the luminous rays." The print is colored by powdering with a vegetable or mineral color, sometimes applying powder of gold, silver, or other metal.

Fifth, the powder is fixed by coating with some varnish, several of which are described. In some cases the glass is covered "with

" collodion iodurized (iodized?) and sensitized with nitrate of " silver. After the operation in the dark chamber, or in the " printing frame under a negative, the print or impression is " developed in a solution of iron or pyrogallic acid; it is after- " wards fixed by hyposulphite of soda and cyanide of potassium, " the print being washed and placed on a gummed, glutinized, " albumenized or waxed paper. The picture fixed upon this " paper may be transferred as may be desired." To shorten " this operation a glass is sometimes covered " with collodion " chloruretted and sensitized with nitrate of silver," and dried " in the dark to be used as required. It is afterwards placed in " a printing frame under a negative and fixed by the hyposul- " phuret (hyposulphite?) of soda." And the print is washed and varnished " with one of the varnishes described under the " fifth operation and then with a gelatinous varnish."

After the preceding operations the prints are colored " with " mineral colors if they are to be transferred to surfaces which " undergo firing to fix the colors, such as porcelain and earthen- " ware."

All photographic prints obtained as above on paper prepared as above may be transferred to all sorts of objects by coating the picture with a thin coat of varnish, place the varnished side on to the object to which it is to be transferred, cover the paper with a damp cloth and rub with a knife or otherwise, raise the cloth, wet the paper well with water when it may be removed or pulled off, and the print dried and varnished.

[Printed, 4*d*. No Drawings.]

A.D. 1862, June 30.—N° 1910.

MURRAY, WILLIAM FULLARTON. — (*Provisional protection only.*)—" Improvements in the manufacture of stoneware bottles " and in apparatus connected therewith." These are, " the " material of which the bottle is composed is formed with an " inwardly projecting part a short distance below the mouth " which grips the cork " at the central part in such a manner as to " effectually exclude air."

Under one modification the neck is formed by a tool consisting " of two small cheek plates of metal jointed together towards the " lower part somewhat in the manner of a pair of pliers. The " outer edges of the plates or the parts near and below the joint " are curved or shaped so that when these edges are pressed in

" contact with the plastic clay it will be caused to take the desired " figure. The upper part of the cheek plates are flattened out so " as to form thumb and finger plates, and a couple of blade " springs are interposed between the plates, so that when not " otherwise acted upon the operating edges are kept closed and " overlapping each other." The tool is suspended to an overhanging lever a counterweight is hung to the other end of the lever or a spring may be applied to take the tool out of the way. The bottle is formed in the usual way on the wheel, the tool is then brought down and the lower part is inserted into the partly formed neck, the potter then presses the upper ends of the cheek plates together, then releases them and withdraws the tool. " The " bottle is then fired and glazed in the ordinary way which " completes the manufacture."

[Printed, 4*d*. No Drawings.]

A.D. 1862, August 18.—N° 2314.

CIMEG, JOHN.—" Improvements in depositing silver and other " metals on fabrics and other materials." These are, in reference to this subject, " glass, china, varnished wares, &c." are first carefully cleaned and " wetted over the parts to be silvered with " the mordant " which may be " many vegetable juices, more " especially those which are acid to the taste and contain simul- " taneously a small amount of tannin or a matter acting like tannin " upon chemical reagents such as currants, sorbs, and other " berries, apples, pears, &c.," and " they having become dry are " rubbed with a soft and dry piece of fabric. In particular cases, " as for glass, it is preferable to extract from the juices by means " of concentrated alcohol the mordant matter required, to acidulate " it with some acetic acid and dissolve it in 200 or 300 parts of " distilled water." A solution is made of ammonia, nitrate of silver, and Rochelle salt, and " the same is made use of imme- " diately either by plunging the objects in the solution or by " pouring the latter over the horizontally laid surface when it is " for looking glasses. At a temperature of from 18 to 20 degrees " celsius the silvering is done in about half an hour, afterwards " the silvered surface must be carefully washed, dried, varnished " or burnished if required."

[Printed, 4*d*. No Drawings.]

A.D. 1862, August 18.—N° 2318.

BOETIUS, HENNING.—(*Provisional protection only.*)—"Improvements in fire-proof materials." These are, the application of the fibrous material "asbestos in combination with fire-clay or "plumbago, or both, for the manufacture of fire-proof ware, such "as crucibles for melting ore, steel, brass, or other homogenous "metals, pots for melting glass, or other fire-proof ware." The asbestos is soaked in water "so as to form a pulp or semi-fluid "paste" and mixed with the before-mentioned materials until "the mixture acquires the consistency of soft clay." Sometimes mixing about equal proportions "of crushed fire-bricks with the "clay or plumbago, or both, before mixing them with the semi-"fluid asbestos."

[Printed, 4*d*. No Drawings.]

A.D. 1862, September 4.—N° 2447. (* *)

PLATT, JOHN, and RICHARDSON, WILLIAM.—"Improve-"ments applicable to the burning of bricks, tiles, and other "articles of earthenware." This invention "consists in a method "of heating a filled kiln in a preparatory manner," by causing the heat from one kiln, "in which the burning of the bricks or "other articles has been effected," to be for this purpose "trans-"ferred to another by means of a blast of air which passes from "the top of the heated kiln to the lower part of the other." This may be done by connecting the fire holes of the two kilns by means of a tube made air-tight, and then blowing a strong current of air into one of the ordinary flue apertures of the hot kiln; this air passes through the tube into the cold kiln, carrying with it the "heat retained by the burnt bricks or other articles, and thus a "a preparatory heating of the said kiln is effected."

[Printed, 8*d*. Drawing.]

A.D. 1862, September 19.—N° 2577.

MAW, GEORGE.—"Improvements in the manufacture of tesseræ "and other mosaic inlays." These are, casting or pressing the molten glass or other vitreous material in moulds formed of a metal plate of about the thickness of the articles to be moulded, and perforated with one or more apertures of the form required for the tesseræ or inlays, care being taken that, for the purpose of

insuring the ready delivery of the finished forms, these apertures be pierced taper. When the mould is being worked a face or bottom plate is placed underneath it, with a flange for the mould to fit in. The molten vitreous metal is filled into the mould from its upper surface, and forced in so as to fill the moulds in the usual way employed in pressing glass. On setting, the superfluous metal is broken away, the under or face plate is removed, " when the moulded articles will be discharged face forwards. " The moulding plate may be in one piece or in several parts." When moulding " square or undercut forms it must be in several " parts." " These tesseræ or other forms of inlays " are also produced " by stamping them of glass or other vitreous material, " employing for this purpose a perforated plate pierced with per- " forations of the form of the article to be moulded, such per- " forations being in close contiguity one with the other, and the " divisions between each brought to a fine edge." If not entirely separated by the pressure these tesseræ can be subsequently divided by fracture, or by means of a diamond, &c. Also " gilding " or silvering tesseræ and other inlays when made of clays or " other earthenware, porcelain, parian, and other ceramic bodies, " by the application of gold or silver leaf to their surfaces under " a vitreous glaze."

[Printed, 4*d*. No Drawings.]

A.D. 1862, September 29.—N° 2645.

ELLIS, HENRY.—" Improvements in the manufacture of com- " pounds of silica, and in the application of certain compounds " of silica to mineralize woven fabrics, paper and paper pulp, to " harden and preserve stone and cement, in the production of " artificial stone and paint, and in the production and glazing of " porcelain and such like manufacture." These are, in reference to this subject, " the use and mode of using the compound soluble " silicates in combination with carbonates and silicates, et cetera, " artificial or native," in " enamelling and glazing, and in the " production of ware similar to porcelain and parian ware, et cetera, " by a low degree of heat." To manufacture the compound silicates " solutions of silicate of soda or of potash," are precipitated " by means of any of the solutions of any of the salts " of the metals, or of the earths," collected, washed, re-dissolved in a minimum of a solution of silicate of soda or of potash, or of both. Borate, phosphate, or chromate of the alkalies added to

the silicates before the metallic or earthy salt is added, a boro, phospho, or chromo silicate is obtained, and the phospho, boro, alumino-silicates, and other compound silicates of the earths and metals are used, " both in a state of solution and in a precipitated " state, and rendered insoluble by heat, for the various purposes " of porcelain and such like manufactures, either for mixing with " the ware for enamelling, or for use as glazing or pigments." " The processes for the production of articles similar to porcelain " and parian ware will in all respects be similar to those described " for the production and glazing of artificial stone." These are as follows :—" Native or artificial silica, or any silicious earth or " mineral in powder, 6 parts by weight. A carbonate native or " artificial, 1 part. A saturated solution of any of the compound " soluble silicates of sp. gr. 1·3 to 1·5 parts by weight." A slate-colored stem for statuary, vases, &c. " Fine slate dust, 12 parts " by weight; carbonate of lime, 2 parts by weight; solution of " soda silicate of lime sp. gr. 1·3, 1 part by weight." " For a " very hard white stone. Silica or flint powder, 6 parts by weight; " carbonate of baryta, 2 parts by weight; soda silicate of baryta " in solution of sp. gr. 1·3 to 1·5, 2 parts by weight." " A softer " slate stone." " Slate dust in fine powder, 8 parts by weight; " carbonate of magnesia, 2 parts by weight; saturated solution " of soda silicate of magnesia, 2 parts by weight." Water is added sufficient to form those substances into a plastic state, and they are moulded and fired. After heating the articles may be coated with silicious paints, and the paints " turned into a glazing " by a very low heat."

[Printed, 6*d*. No Drawings.]

A.D. 1862, September 30.—N° 2653.

HUGHES, James Leigh.—" Improvements in producing orna- " mental patterns in gold and color on porcelain, earthenware, " glass, and enamel." These are, first, in producing ornamental patterns in gold, the whole or such parts of the surface of the article intended to be ornamented are covered with gold in the manner ordinarily practised and burned in. On to the surface or parts so coated is placed " a printed impression, taken by preference " on paper from an engraved plate or from other printing sur- " face," in a bituminous or other varnish which will resist the action of acid. The paper is removed, and the impression being set, an acid, " aqua regia or fluoric acid " " diluted, about

" one of acid to one of water " is applied, which dissolves or loosens the gold where it is unprotected by the varnish of the impression. An impression may be applied artificially by hand, or the whole surface varnished, and " the parts to be acted on by " the acids may be removed by a graver or other suitable instru- " ment." Platinum may be applied in like manner and " may form parts of a pattern, whilst the other parts of the pattern are gold.

Second, in producing a pattern in color, the whole surface to be ornamented is covered " with a uniform coating of enamel color, " by preference, in the manner known to china and glass painters " as 'ground laying,' " and " proceed in the same manner " as above, only using fluoric acid " for dissolving or removing the " colored enamel in those parts where the same is not protected " by the varnish." After the action of the acid the articles are washed in water, and the varnish removed by a spirit such as of tar and burnished, &c., if desired.

[Printed, 4*d*. No Drawings.]

A.D. 1862, October 3.—N° 2670. (* *)

ROBOTHAM, Thomas John, and OSWALD, Edward.—(*Provisional protection only.*)—" Improvements in apparatus for " purifying 'glaze,' 'slip,' or other potters' materials."

" The apparatus consists principally of a vertical shaft with " four or more horizontal or inclined arms projecting therefrom, " and provided with any convenient number of permanent or " electro-magnets, which shaft is caused to revolve (by means of " any suitable gearing) in a vat or circular vessel containing the " 'glaze' or other material, so as to come into contact with and " take up every particle of iron or other magnetic substance that " may be incorporated therewith. When electro-magnets are " used attached to the horizontal arms the positive ends of the " wires are collected together into one bundle and the negative " ends into another, so as to form two separate bundles of wires, " and to each of these bundles a thick copper wire is soldered " and conducted up the shaft. Each of these wires is made to " dip into a separate cup of mercury of which there are two " attached to the shaft and revolving with it, and these mercury " cups are respectively connected with the positive and nega-

" tive poles of a galvanic battery so as to complete the electric " circuit."

[Printed, 4*d*. No Drawings.]

A.D. 1862, October 16.—N° 2802.

NELSON, EDWARD.—" Improvements in the manufacture of " apparatus for heating and superheating steam and air without " decomposition." These are, as follows:—Fine clay is ground and prepared in the finest manner, and mixed with an equal weight of coarsely ground fire-brick, adding about 25 per cent. of dried horse dung, also adding vegetable or animal gluten dissolved in a decoction of malt, barley, beer, or solution of biborate of soda or caustic potass or soda, also sugar, molasses, &c. This mixture is pressed in strong bags. A porcelain body is next procured more fusible than the above, and by means of a pipe-making machine, or otherwise, a tube is formed, in which is inclosed an air and water-tight calico cylinder filled with air, and " build up as it " were, this porcelain clay tube in a cylindrical wall of the fire- " clay mixture, so that it is of a spiral form," and place it in a strong iron case which completely surrounds it; then by suitable means the enclosed porcelain clay tube is subjected to the pressure of water internally, by which the calico tube is burst, and thus " obtain a good union of the two kinds of clay, and the iron case " prevents change of form." The superheater is removed from the iron case, and placed in another case, " when the workman " finishes all ready for the ultimate drying, and then places it in " the kiln," where the firing must be got up very gradually so as to evaporate the moisture before completing the firing. Where the superheater is burned it is fitted with an iron case and packed with dry plumbago and burnt fire-clay.

[Printed, 1*s*. Drawing.]

A.D. 1862, October 27.—N° 2893.

LINDEMANN, GUSTAV.—" Improvements in the manufacture " of bricks, tiles, slabs, and other articles of earthenware or other " plastic material, and in the machinery or apparatus connected " therewith."

These are, first, the use of a perforated cylinder or its equivalent for the purpose afterwards mentioned; also the use of a curved bar in connection with the said cylinder.

Second, the method of delivering the moulded articles on to a travelling surface."

Third, "the use of a hopper with a travelling side or sides."

The material is screened from stones by forcing it "into a roller "provided with slits or other openings for its passage, and through "which it is again propelled into moulds or other shaping appa- "ratus; or the moulds may be detached, and the moulding pro- "duced by a separate operation." In order to force the material in the first instance through the openings, using "another but "plain roller working in conjunction with that above-mentioned, "and for the purpose of discharging it again" using "a sta- "tionary curved plate which gradually conducts the material "outward. When the articles are formed by being forced "through moulds, and are then cut off, causing "such articles "to abut against a plate kept in position by levers, which where "the material is severed turn downward, and deliver the article "on to a travelling surface." A flat surface may be used instead of a cylinder for screening the material from stones. Two or the four sides of the above hopper are formed by aprons passing over rollers having rotary motion, the inward surfaces travelling downwards assist the passage of the clay to rollers or other appa- ratus which are to operate upon it.

[Printed, 10*d*. Drawings.]

A.D. 1862, November 25.—N° 3164. (* *)

RANSON, GEORGE.—This invention is applicable to the sifting and screening of clay for making bricks "by the dry process," and "for the manufacture of some kinds of pottery and tiles." The inventor suspends an ordinary rectangular sieve from a beam by straps, so that one end shall be slightly higher than the other. He fixes lengthways to the bottom of it "several slack thin "chains" of one-eighth inch iron, "sufficiently longer than the "sieve to shake about among the clay when the whole is set in "motion, but not slack enough to touch each other. A vertical "shaft hanging over the centre of the sieve, and having at its "lower end a crank to which the sieve is connected, receives "rotary motion, and communicates a circular motion to the sieve "causing the fine clay to fall through it." The inventor finds it advantageous to use "a combination of two or more of these im- "proved sieves placed one under the other in the same frame, so "as to form a compound sieve, and moved or agitated by one

" crank as above described." He prefers perforated zinc to wire-work for the bottom of the sieves, but either may be used. The parts separately are not claimed, but the invention consists in the above combination of them, and mode of agitating them for the purpose of sifting clay.

[Printed, 8*d*. Drawing.]

A.D. 1862, November 28.—N° 3194.

BULLER, WENTWORTH, and MUGFORD, JABEZ HEARN.—" Improvements in spur-supporting rings for fixing plates, dishes, " and other like articles in glost ovens." These are, first, the employment in such ovens " of spur-supporting rings in the form " of a circular rim, and in one piece with legs," which project somewhat beyond the general surface of the exterior of the ring. There are three legs.

Second, " the employment of moveable points or spurs inserted " in recesses or holes in circular rings." In preference the points or spurs are formed with a circular or any other suitably shaped base, the outer edges of which are made to agree with the lower or inner sides of the recesses in which they are used, whereby slipping is prevented. On the upper side of this base a conical point is formed, while the under part is left plain, or with three or more slight projections. Dies or moulds made of iron or steel, &c., are made by fitting " into an outer case or cylinder, having " the contour of its inner surface similar to the outer edge of the " ring to be produced, an annular piston or ring capable of " moving freely up and down therein. This piston forms the " bottom of the disc or mould, and has on its upper side projec- " tions exactly similar to the recesses required on the upper sur- " face of the ring to be produced. The top or upper part of the " die or mould is also an annular piston or ring, and fitted to " slide freely up and down in the outer case or cylinder, the under " side thereof being recessed to form the body of the ring, while " the legs are formed by recesses cut in the edge." These dyes are worked in an ordinary fly press.

[Printed, 8*d*. Drawing.]

A.D. 1862, December 5.—N° 3261. (* *)

TILDESLEY, MATTHEW, and SHARPE, EDMUND.—(*Provisional protection only.*)—" Improvements in the manufacture of

" earthenware knobs, and in fixing them ; in spindles used with " certain kinds of knobs ; in securing the metal mounts upon " such knobs ; and in apparatus to be employed in certain parts " of this manufacture." The knobs are moulded in metal moulds lined with plaster of Paris ; " the sinking on the back of the knob " for the mount and spindle, or for the screw, as the case may be, " is formed by employing a plug of fired earthenware surrounded " by plaster of Paris, the plaster being protected at the bottom " by the form of the plug which resembles a piston with its rod " covered with plaster ;" the sinking is by preference made " square in section." The hole for the metal, which is intended to secure the mount or screw in the knob, is pierced by " a pecu- " liar instrument formed similarly to a pair of glove stretchers " with a horizontal pin or stud upon the end of each limb ; the " tool when closed will pass into the sinking for the mount ; pres- " sure by the hand then forces the pins or studs laterally into " the clay." The knobs, when moulded, sunk, and pierced, are " glazed and fired by the ordinary process." In knobs intended for drawers or cupboards " a male screw or plain plug, tapped to " receive another screw inserted from the back " of the drawer or or door, is substituted for the mount. The knobs and mounts or screws are fastened together by running an alloy of metal into the holes ; " this alloy consists of about two and a half per cent. " by preference of regulus of antimony, about the same propor- " tion of tin, the remainder being lead." The spindles are grooved on all four sides throughout their length " by rolling the " iron in suitable rolls to any necessary length, and then cutting " up the rod thus produced into lengths for each spindle."

[Printed, 4*d*. No Drawings.]

A.D. 1862, December 6.—N° 3272.

CRAIG, JAMES, and CRAIG, MATTHEW.—" Improvements in " apparatus for the manufacture of clay." These are, as follows :— According to one modification," the clay after passing through the " ordinary grinder is elevated into a hopper, which delivers it into " a revolving cylindrical riddle, and the riddled clay is elevated " into a second hopper, whilst the portions not fine enough are " returned to the grinder. The second hopper delivers the clay into " a small feeding cylinder, through which it passes into a pug mill " of the ordinary kind. The amount of feed is regulated by the " action of a revolving screw inside the feeding cylinder, by

" which screw the clay is propelled through, the speed of the " screw being adjusted in relation to that of the pug mill shaft, " as circumstances may require, whilst a kind of overflow duct " may be fitted to the hopper to carry back for re-elevation any " surplus clay supplied beyond what the screw can carry forward." According to another plan the clay is fed into the pug mill by means of an elevator, which takes the clay " from a hopper or box " kept constantly full by a second elevator, and provided with " an overflow duct, by which the surplus clay returns to be re- " elevated. Water is supplied to the clay in the pug mill by " means of a pump driven by a crank or eccentric on a spindle " suitably geared to the pug mill shaft, and the amount of water " supplied is adjusted by altering the stroke of the pump. The " connecting rod from the crank or eccentric is jointed upon a " lever fitted with a block, movable more or less distant from the " fulcrum by means or a hand wheel, and to this block is jointed " a rod which works the pump either directly or through a lever. Another improvement relates principally to the cutting of pipes " expressed in a downward direction through dies in the bottom " of the pug mill. The issuing clay pipe is received on a table " held up by counterweights, but which descends with the pipe, " and it has been usual to cut off the pipe length by a wire in a " frame guided by guides fixed in relation to the pug mill, this " resulting in a slanting cut being made in consequence of the " pipe continuing to issue or move downwards whilst being cut." By this invention the guides for the cutting frame are connected " to the moving table so as to move therewith, and the cut is in " consequence made square across whatever motion the pipe may " have. The cutting frame with its guides is made adjustable " so as to suit different lengths of pipe, and is arranged to " return to its starting position after each cut."

[Printed, 1*s*. Drawings.]

1863.

A.D. 1863, February 7.—N° 350.

MILLER, JAMES, and STRUTHERS, WILSON.—(*Provisional protection only.*)—" Improvements in securing the corks, stoppers,

" or lids of bottles, jars, and other similar vessels." These are, two holes are formed opposite to one another in the neck of these vessels during their manufacture, or while they are soft, and a " wire, a pin, or other retaining medium may be easily passed " through the cork." "The projecting portions of the wire are " secured by passing the ends down under the external rim and " twisting them together, or if string is used for the purpose, the " ends are firmly knotted together." Greater security may be obtained " by carrying the wire upwards and over the cork, and " then twisting the extremities together." Pins or screws, or a pin and screw formed either of wood or of iron or other suitable material, may secure the cork or stopper by being passed through the hole or holes, and being pressed or screwed into the cork or stopper. Where these stoppers " are formed of glass, china, " earthenware, gutta percha, or other suitable material, a trans- " verse or circular aperture is formed in the stopper to correspond " to the holes in the neck of the bottle or jar." For wide-mouthed jars the lids usually overlap the mouth of the jar, and holes are pierced through the overlapped portion of the lid as well as in the jar itself, and they are fastened by pins or straps. " In the case " of jars where the lids fit inside of the mouth an indented ring " is formed round the edge of the lid, into which the pins passing " through the holes in the neck of the jar fit, or holes corre- " sponding to those in the neck of the jar are pierced into the " cover of the lid into which the pins fit, or the lid may be sunk " sufficiently far into the neck of the jar so as to admit of a pin " or pins being passed through the holes in the neck across the " top of the lid, thereby fixing it firmly in its place."

[Printed, 4*d*. No Drawings.]

A.D. 1863, February 21.—N° 471.

MALPAS, CHARLES.—" Improvements in ovens or kilns for " firing, burning or baking pottery, bricks, tiles, and other earthen " or ceramic articles." These are, first, " the construction and " employment of annular ovens or kilns with revolving beds " for the above purposes, " having one or more external furnaces, " and diametrically opposite these or at some distance from the " same, one or more openings for filling in and removing the " goods to be fired, and in which ovens or kilns the draught from " the furnace or furnaces passes directly underneath the objects " to be fired, and thence vertically up among the same into one

" or more flues formed over or near the roof of the oven or kiln ; also in combination with the above these two flues " communicate " respectively with a series of flues lining both the inner and " outer annular wall of the oven or kiln to a certain extent at " that part of the same where the rotating bed is approaching the " furnace, which flues, after passing vertically downwards, all " communicate with a chimney shaft. One or more valves or " dampers are provided for regulating the flow of the hot gases " into these flues, so that the heat may at pleasure be conducted " more to one side or the other as required."

Second, " the construction and employment of a chamber " serving as a mustering, drying, and placing room formed on " the top of annular ovens or kilns with rotating beds, so as to " utilize the spare heat therefrom."

Third, " in combination the arrangement of the several parts of " annular ovens or kilns with rotating beds " as above.

[Printed, 2*s*. Drawings.]

A.D. 1863, February 23.—N° 488.

BROOMAN, Richard Archibald.—(*A communication from Cyprien Marie Tessié du Motay and Charles Raphael Maréchal.*)—" Improvements in dressing millstones in ornamenting or en- " graving on glass, pottery, and other similar substances, and in " materials employed therein." These are, carrying out the above objects " by the action of hydrofluoric acid on the silicious matter " of which the materials are more or less composed. " Those parts " of the surface which are not to be eaten out " by the hydrofluoric acid are covered either by hand or by printing with " one " of the inks or varnishes " afterwards described, and " which " are not acted upon by hydrofluoric acid." " The varnish may " be composed of wax, pitch, bitumen, essence of turpentine," which " may be replaced by benzine, essence of lavender, or " any other essence," " spermaceti, mastic, or any other resinous " substance " mixed together in various proportions according to the fluidity required. " Instead of this varnish the soft varnish " employed in engraving by means of aquafortis may be used." Three inks are described, ink A consists of bitumen, stearic acid, essence of turpentine or benzine, resin, plaster (sulphate of lime), coal. Ink B consists of gutta percha, caoutchouc, benzine mixed together, bitumen, stearic acid, resin, boiled linseed oil (very viscous), plaster, coal. Ink C consists of gutta percha, caout-

chouc, benzine mixed together, resin, boiled linseed oil (very viscous), plaster, coal. "The plaster, coal, and other substances " not fatty or resinous should be pounded finely in a mortar. To " facilitate this operation benzine, essence of turpentine, essence " of lavender, or other essence, raw linseed oil, fatty oil or resin " oil may be added to the inks." The proportions in which these substances may be used in the different inks are given, but, it is said, they " may be used considerably, according to the time of the " year, and other circumstances."

[Printed, 4*d*. No Drawings.]

A.D. 1863, February 24.—N° 500. (* *)

HAWTHORN, John.—" Certain improvements in handles for " doors, drawers, and other means of enclosure." The handles or knobs, to which this invention applies, are such as are made of " china clay, earthenware, or other argillaceous substances," and the improvement consists in the method of securing the spindle to the knob. The spindle is a " double metallic screw ;" the knob is tapped with a female screw ; the upper portion of the spindle is screwed into it and " secured therein by means of a cement, such " as plaster of paris." The projecting portion serves to fasten the knob to the door or drawer.

[Printed, 6*d*. Drawing.]

A.D. 1863, February 26.—N° 544.

CLARK, William. —(*A communication from Achille Auguste Feldtrappe and René Dutfoy.*)—(*Provisional protection only.*)— " Improvements in the manufacture of buttons and in apparatus " for the same." These are, in a button made " of any ceramic " plastic material, such as porcelain," having " instead of the " common shank or projecting fastener, a hole or passage made " laterally through the body of the button ; this fastener may " be formed at once with the button or be fitted to it of any " ceramic or metallic substance. On both sides of the lateral " passage or tunnel which constitutes the fastener, there are two " cuts for the easier passage of the needle which carries the thread " through it." To produce the above buttons, in a frame are a series of upper tools operated by any suitable press, the lower part of these having the external form of the button to be produced. The lower tools have guide slides which form the channels through the body at both ends of the tunnel, and transverse

pins produce the hole or tunnel which constitutes the fastening shank. Or the button may be first molded and the tunnel is afterwards made by piercing, boring, or otherwise acting upon the body of the button.

[Printed, 6*d*. Drawing.]

A.D. 1863, March 26.—N° 796. (* *)

JOHNSON, JOHN HENRY. — (*A communication from Louis Hébert.*)— (*Provisional protection only.*) — The object to be obtained by the invention is a better and more perfect combustion of small and inferior coal in steam boiler and other furnaces or fire-places.

The "hydrofère" or apparatus employed consists of a tubular case fitted transversely inside the door of a closed ash-pit; the outer end of this tube is open to the atmosphere and the inner end is closed, but a line or series of holes, opening inclinedly upwards is made along that portion which is disposed inside the ash-pit. A small steam pipe perforated to correspond with the holes in the tubular case is concentrically placed therein. When steam is turned on, it escapes in jets through the perforations in the small pipe and straight through the holes in the tubular case directed against the under side and between the furnace bars, mixed with the atmospheric air which is induced or drawn in to the open end of the tubular casing by the tendency to create a vacuum caused by the velocity with which the jets of steam pass from the inner steam pipe through the interspace between the pipe and casing and out through the holes in the latter into the open space of the ash-pit. The invention modified is applicable to heating and welding furnaces, and also to puddling furnaces wherein by reason of the impulsive force of the steam jets the stream of flame is considerably augmented.

"In locomotive boiler furnaces the tube of the injector may be "placed horizontally outside the ash-pit, whilst in marine boiler "furnaces it may assume a vertical position; but in both cases "the end or ends of the tube or tubes is or are provided with a "bend to direct the jets upwards against the grate."

The injecting apparatus . . . . . is applicable to the furnaces of brick, pottery, and other kilns, and to every description of furnace where grate bars or equivalent means are employed for supporting fuel.

[Printed, 4*d*. No Drawings.]

A.D. 1863, April 7.—N° 875. (* *)

MACINTYRE, JAMES.—"Improvements in the manufacture of "knobs and other articles in china and earthenware." The patentee employs turning in the manufacture of, 1, the above articles "of an oval or other form diverging more or less from a "circular form;" 2, knobs, balls, handles, hat pins, and other similar articles "of a reeded, fluted, or other ornamental form." For the first the lathe required is constructed as follows:—A spindle is supported in bearings formed in a casting, and it receives motion from a crank shaft by a strap passing round an upper and a lower pulley; it is capable of being slided in the direction of its length when it is desired to change from circular to oval turnings, or vice versa; for this purpose there are suitably arranged clips, grooves, and a slotted lever handle, which lock the spindle in the required position. On the spindle is fixed a chuck "provided with V guides," between which a slider is moved to and fro by means of lugs thereon; the lugs embrace the outer surface of a ring "which is fixed in a position more or less "excentric to the spindle," according to the shape of the oval to be given to the knob. A chuck of suitable form is screwed to the slider, and the knob, &c., is secured upon it, "a rough ap- "proximation to the form and size desired" having been first given to the knob, &c., "by throwing or other suitable means." For circular turning the spindle is slided forward until the lugs are clear of the ring, and the slider "is fixed in a central position" by a bolt passing into a hole formed in a projection thereon. In order that the article may be of uniform size and shape, it is preferred to use a tool, "the cutting edge of which is suitably formed "to produce the shape desired;" it is secured in a holder supported in a rest, and a stop on the holder ensures the tool "always "working up to the same point." This tool "only gives form "to the head of the knob," whilst another "conveniently held "in the hand, gives form to the stem." To carry out the second part of the invention a lathe of different construction is required; the spindle is formed at its outer end in a pivot which is supported in the socket of a rod passing through the casting; the inner end is carried "in a bearing formed in one end of a lever which is "capable of rocking upon a centre of motion." To turn plain circular work a lever catch locks the upper end of the lever; but when an ornamental form is to be given to the article, the catch

is raised, thereby setting the lever free "and permitting a vibratory "motion being imparted to it, and consequently to the spindle," by means of a rose plate or template; this is borne up to a fixed roller or pulley by a spring which acts upon the upper end of the lever; the force of the spring is adjusted by a screw. A cone pulley on the spindle is employed for giving motion when circular work is being produced; and an ordinary grooved pulley for ornamental work. In some cases the spindle is supported at each end by a lever, "these levers being cast in one and rocking upon "the same centre of motion," so that the spindle "may have a "vibratory motion given to it in a parallel direction."

[Printed, 2*s*. Drawings.]

A.D. 1863, April 22.—N° 1000.

DURAND, FRANÇOIS.—"Improvements in moulding articles "of china or other clay, or of other plastic materials." These are, making use of thin sheets of india-rubber, or other suitable elastic material, fixed or not on the mould or lower die, and on the upper, or counter die or stamping tool, with "an interme-"diate tissue interposed or not, as required, for the purpose of "allowing the free escape of the air contained between the upper "and lower dies, so as to allow an automatical moulding and "unmoulding of any article of ceramic or other suitable plastic "material." The above is what is contained in the Provisional Specification, but in the Final Specification a mould is described on which the elastic material may be laid or fixed by a suitable moveable frame. "The inner central or bottom part of the "mould is caused to move vertically by a rod, "the surface of "which is provided with one or more longitudinal flutings, ser-"rations, or grooves," by which the air contained between the india-rubber and the mould escapes. These grooves are "made to "serve also as guides for the rods." A spring below the rod attached to the central part would cause it to rise up above the bottom of the mould, when the pressure is removed from it. "For preventing that, by the effects of a partial vacuum, the "the india-rubber" "should remain adhering to the moveable "bottom part," "a piece of silk or other suitable tissue or "material, allowing the air to pass freely through its meshes or "pores," is laid over the top of the moveable part whilst the lower surface of the die which enters the mould is covered in a similar manner. Two machines or lathes are also described,

one of which has this arrangement, and the other a modification of the same, "the general arrangement and combination of parts" of which are claimed.

[Printed, 10*d*. Drawing.]

A.D. 1863, May 11.—N° 1182.

PARKINSON, JAMES.—(*Provisional protection only.*)—"A new "or improved mode of manufacturing tablets to be used for "monumental purposes." This consists, first, in substituting tablets, slabs, blocks, or plates of earthenware, instead of stones laid over graves or tombs, and for other monumental purposes. They may be made of ordinary or fine clay, other similar plastic material, "or it may be made of ordinary clay, and coated or laced "with a clay or cement of a finer quality, and it may be wholly "or partially glazed or enamelled."

Second, "impressing the said tablets, by means of moulds of "any suitable shape and design, having also upon them raised "or sunk letters, figures, or characters descriptive of the subject "intended to be memorialized or recorded by the said tablets." Unglazed tablets "are also suitable to be painted and otherwise "decorated with colours and pigments," or "letters, figures, "or characters cut into their substance in addition to those "impressed as herein-described."

[Printed, 4*d*. No Drawings.]

A.D. 1863, May 12.—N° 1189.

WARREN, THOMAS.—"Improvements in glass and other fur- "naces or kilns." These are said to be "the so constructing and "working furnaces or kilns in which separately prepared fuel gases "are burnt, that the air, or a portion of the air, supplied for "combustion, passes through gratings having a small quantity "of burning fuel thereon," substantially as follows:—"The fuel "gases, by preference, in their heated state, as formed, are dis- "charged in the centre of the chamber from a funnel" mouth upwards. "It is desirable to heat the air which has to be intro- "duced into the chamber for the combustion of the fuel gases, "and partly for this purpose, the air entering by passages below "is made to rise into the chamber through two narrow gratings "disposed in line, one on each side of the gas funnel, and running "centrally between the sieges for the melting pots. On these

" narrow gratings a little fuel is burnt, and more air than is " necessary for its own combustion passes through this fuel, and " becomes heated thereby, and in a suitable condition for using, " being, with the gases, discharged from the funnel." " Instead " of the sieges being parallel to each other as commonly arranged, " the furnace may be so shaped that the middle parts may be " wider apart, and not too near to the gas funnel." The used gases pass off from the furnace by flues at the four corners, and what available heat they still retain is utilized by causing them to pass through the ash arches. The above details may be modified. These arrangements are also applicable to other furnaces or kilns as for " heating iron plates, puddling furnaces, pottery kilns, and " others."

[Printed, 10*d*. Drawing.]

A.D. 1863, June 15.—N° 1492.

FORRESTER, JOHN.—" Improvements in the manufacture " of bricks, quarries, slabs, tiles, earthenware pipes, and other " earthenware or ceramic articles." These are said to be " glazing any or every description " of the above articles, " by " first coating such articles, when in an unfired state, either " wholly or partially with every suitable glaze material, and then " firing, baking, or burning them, so as to produce a glazed sur- " face upon them, and fire, bake, or burn them at one and the " same operation." The glaze when in a liquid state may be run upon the articles or put on with a pencil or brush. Sometimes the glaze dried is reduced to a powder, and the article is coated by dusting it, when moist, with the powder, or by " causing the " glaze material to adhere to the same by applying it under any " suitable pressure." In preference " employing for the glaze " material any vitreous compound, ground fine and sifted pre- " vious to using the same." If requisite, coloring such glaze material " by mixing with it oxidized metallic or earthen com- " pounds, such as are well known for that purpose," or painting, printing, or transferring " patterns or ornaments of any required " color and description on to the surface of the unfired bricks, or " other articles, previous to coating the same with the glaze " material." Articles thus coated when fired are exposed to the flame or otherwise.

[Printed, 4*d*. No Drawings.]

A.D. 1863, June 24.—N° 1594.

HUGHES, JAMES LEIGH.—"Improvements in ornamenting "porcelain." These are, impressions are made upon porcelain with a varnish which will resist acid by engraved plates or other printing surfaces. The uncoated surfaces are then eaten away by hydrofluoric acid, as is well understood; the varnish is removed and the gold is applied to the eaten away parts and burned into them, "in the ordinary manner of applying and burning por- "celain." "When any parts of the design produced by eating "away the unprotected parts of a transferred printed impression "are desired to remain white, or of the previously colored sur- "face, the whitening or other suitable material is to be applied "to such parts before applying the gold, so that the gold may "not adhere to such protected parts when the porcelain is "burned." "To this stopping out of the gold" no claim is made "when the same is unaccompanied by the application of "gold on to the eaten away or unprotected parts of a transferred "printed impression."

[Printed, 4*d*. No Drawings.]

A.D. 1863, June 30.—N° 1627.

JOHNSON, JOHN HENRY.—(*A communication from Robert Marcher.*)—(*Provisional protection only.*)—"Improvements in "machinery or apparatus for moulding or shaping pottery ware." These are as follows:—An upright shaft, the lower part attached to a frame, a horizontal plate being attached to the upper part, on this plate are two parallel guide bars, between which works a slide having an oval plate secured to its inner surface. "To the "under side of this slide are fitted two pendents, which pass "down at opposite sides of a circular projection fixed perma- "nently to the main framing and in an eccentric position to the "upright shaft or spindle of the machine." "The 'former' or "shaping plate is curved or shaped to correspond to the section "of the inner surface of the dish to be moulded; it is attached "to a horizontal bar, one end of which has a dove-tail slot made "in it, a corresponding projection fitting such slot and allowing "of a slight longitudinal play of the horizontal bar. The pro- "jection is secured to an upright attached to the framing. A "mould of plaster of Paris or other suitable material is secured "to the eccentric chuck or lathe herein-before referred to, its

" inner surface corresponding to the outer surface of the dish to " be moulded. A cam and spring impart a vibratory motion to " the horizontal bar and 'former' if a fluted dish be required, " but for plain dishes" they are dispensed with.

A simple modification "for moulding plain dishes, consists of " a vertical slide working in guides and suspended by a counter- " weight from its upper end, whilst its lower end carries the " shaping plate or 'former,' which shapes the clay contained in " the mould fitted to the horizontal table or plate of an eccentric " lathe or chuck beneath, no cam being employed for vibrating " the 'former.'"

[Printed, 4*d*. No Drawings.]

A.D. 1863, July 2.—N° 1646.

BROOMAN, RICHARD ARCHIBALD.—(*A communication from Camille, Baroness de Lavenant.*)—" Certain compositions for pro- " tecting metals and metallic articles from oxidation, and for " coating slate, bricks, pottery, and ceramic ware." These are, first, a colorless with a crystal base " 680 parts of crystal or glass, " 250 parts minium, 80 parts of sub-carbonate of potass, and 100 " parts borax. This composition serves as the base of all the " others."

Second, a blue color is formed by adding to the above " 10 parts " of cobalt blue or with binoxides of copper and steel."

Third, a red color " the same substances as for the colorless base, " the proportion of sub-carbonate is increased and of minium " diminished, and there are added to the base five parts of copper " turnings or filings previously immersed for 24 hours, more or " less, in white Burgundy vinegar, then dried, or with the addition " of ten parts protoxide of copper, stirred in with a copper rod. " Taking a plate of cast iron covering it with white Burgundy " vinegar and leaving it for three days, then gathering the rust or " oxide, drying it, and mixing it" " with a greater or lesser pro- " portion of the colorless bases according to the deeper or lighter " shade required."

Fourth, a green color, the first substance with about 3½ parts sulphate of copper.

Fifth, a yellow color, the first substance, except that borate of iron, is substituted for the borax.

Sixth, a jet black color, the first substance with the addition of pounded iron scale.

Seventh, a silver color, "granules of virgin silver dissolved in " nitric acid precipitated by aqua regia, then mixed one-fifth " with four parts of borax. For this operation wood, glass, " porcelain, or earthenware vessels only should be used."

Eighth, a grey color, " 680 parts of the colorless base, 10 parts " of carbonate of lead, 10 parts of oxide of copper, and 30 parts " of phosphate of lime precipitate."

Ninth, a brilliant black color, " 3000 parts of the colorless base, " 20 parts of phosphate of iron, and 10 parts of borax."

Tenth, a white color, " 450 parts of colorless base, 280 parts of " chalk, or 50 parts of phosphate of lime precipitate, and 5 parts " of boric (boracic?) acid."

Eleventh, a bronze color, " 680 parts of colorless base, 20 parts " of cyanide of iron, 10 parts of arsenite of copper, 10 parts of " carbonate of soda, and 5 parts of minium."

Twelfth, an olive color, " 300 parts of colorless base, 10 parts " of chloride of mercury, and 10 parts of phosphate of potas- " sium."

As minium has a tendency to dissolve too rapidly "it may be " dispensed with in the composition of the colorless base which " may be formed of the following ingredients:—1360 parts of " crystal glass, 180 parts of potass, 400 parts of borax, 400 parts " of carbonate of soda; or 680 parts of crystal or glass, 160 parts " of tartar, 80 parts of nitre, and 200 parts of borax."

These modes of preparing the colorless base and also the five last mentioned modes of preparing colors are not given in the Provisional Specification. After the colors or compositions are fused, they are thrown on to metal, ground to a fine powder, and either mixed with water, or with turpentine, or with oil, fatty matter, or varnish and applied by means of a brush, &c.

[Printed, 4*d*. No Drawings.]

A.D. 1863, July 27.—N° 1863.

FORD, Frederick, and FORD, Lewis.—"Improvements in " the manufacture of various articles with surfaces in imitation " of different kinds of marbles or similar ornamental materials." These are, " enamelling the surfaces of articles composed of terra " cotta or earthenware by means of floating colors applied thereto, " such surfaces being afterwards dried, varnished, and polished," as follows:—" Colors resembling those in the required marble " are prepared "with turpentine and copal varnish in about equal

" quantities," and they are "separately thrown on to water," "so " that the colours may float on the surface of the water." "These " floating colours are or may be stirred or blown, so as to cause " them to represent the required vein of marble, and the painted " terra cotta or earthenware is gently dipped therein," and "the " floating colors are thereby caused to adhere." The colored ware is then dried, cooled, "varnished with copal varnish, and " again dried and hardened by means of heat, and after being " cooled the surface is polished by means of pumicestone or " other polishing material. The varnishing and polishing may " be repeated to the extent required." Colors prepared in water with a little gum arabic or similar ingredient added may be substituted for the varnish colors, they are applied by means of a brush or otherwise, "the subsequent processes of drying, hardening, " and polishing being carried on as in the former case."

[Printed, 4*d*. No Drawings.]

A.D. 1863, August 31.—N° 2146.

KRAMER, HENRY EDWARD.—"Improvements in printing in " colors, pictures, or devices to be used in ornamenting porcelain, " stoneware, earthenware, or any other substances where the " colors can be annealed or melted, or burnt in." These are, pressing the paper in a glazing machine, washing it over "with a " well made wheaten starch or other suitable substance of a " similar character," when dry the paper is again pressed as above and then "place over it a thin coat of clotted oil of turpentine " or other oil." The colors used are all mineral, and "are pre- " pared by mixing them with a mixture of sticky oil of turpentine " and oil of cloves; this mixture is similar to those used by china " painters but must be mixed stronger." The color so mixed is applied "to the types by the rollers, which are by preference made " from a solution consisting of the best syrup and good trans- " parent glue." The printing types are placed in a printing press of ordinary construction, and are fixed in the right position " by iron frames, one being employed with each of the types " printed together."

[Printed, 4*d*. No Drawings.]

A.D. 1863, October 3.—N° 2425.

WILSON, EDWARD BROWN.—"Improvements in the manu- " facture of iron and other metals, and in the apparatus employed

" therein, parts of which are applicable for other purposes where " high temperatures are employed, and also for ventilation." These are " for smelting ores and melting pig iron or other metal " taking " an ordinary blast furnace or cupola, and at or near to the present blast holes, " taking off " the gaseous products of com- " bustion by a flue or flues into a tall chimney," in which it is preferred " to have a jet or series of jets of steam when necessary " to increase the draught " charging " the furnace as at present " when the chimney alone produces sufficient draught." Providing a damper to regulate the current or draught, and near the gas exits providing " inlets for air, which may be forced in or " otherwise so as to complete the combustion of the gases before " they leave the furnace if thought desirable." Sometimes having " air holes some feet below the top of the furnace, con- " tinuing them at intervals to the bottom to increase the com- " bustion of the gases." When the chimney does not produce sufficient draught closing in the top of the furnace and blowing " on to the fuel from the top of the furnace by means of a blast " pipe, charging the fuel and metals or ore through a hopper or " hoppers, tapping the metal or slag as in the ordinary manner." " The other purposes to which this invention is applicable are " such as the manufacture of glass and porcelain, or other " purposes for which intense heats are required."

[Printed, 10*d*. Drawing.]

A.D. 1863, October 7.—N° 2450.

LEAK, ELIAS.—" Improved apparatus to be used in placing " 'glost,' china, and earthenware in ovens and kilns for firing, " burning, or baking such wares." This consists in " the employ- " ment of loose arms for supporting the ware, matching or fitting " into recesses formed in a suitable pillar, whether such pillar be " composed of thimbles " or constructed in any other suitable manner. A stand and thimble, similar to those described in No. 1715, A.D. 1856, are employed, but instead of having arms or branches fixed to the thimbles, employing loose arms the lower branch of these arms is formed in a wedge-shape, and fits into a hole or recess formed in a projection or lug on the thimbles, and the other branch terminates in a point which supports the ware. The arms may be either curved or straight or of any convenient form to suit the ware to be supported. " Both the taper " hole and the exterior of the thimble have one side flattened

" which will prevent any thimble from turning round." Thimbles may be "adapted for two arms which may sometimes be used; " in this case only two pillars will be required, vizt., one with " with two points and the other with only one." " Various other " modifications in the forms of the thimbles and branches may " be made." By the above arrangement "a double economy is " effected. In the first place only the arms require to be made of " earthenware, the stand and thimbles being made of a coarser and " cheaper material; and, secondly, should one of the arms or " points become damaged or broken the arm alone requires " renewing, the thimble being still available." This arrangement it is said also allows of the ware being placed closer together, and " each article will have only three marks instead of six or twelve " as by the cockspurs and stilts now ordinarily employed."

[Printed, 8*d*. Drawing.]

A.D. 1863, November 6.—N° 2761.

CAMPBELL, Colin Minton.—(*Provisional protection only.*)—" Improvements in apparatus for drying plates and other articles " of china and earthenware." These are, " to enclose the heat " and to obviate the necessity of boys passing in and out of the " drying room to place the plates or other articles on to or to " remove them from the shelves, placing " in the centre of the " drying chamber a vertical axis, from which horizontal arms " project that carry at their outer ends a circular rack. The " outer end of the circular rack comes within a short distance of " the outer wall of the drying chamber," and in this wall is a slit or opening (from top to bottom closed by means of a sliding door), through which the articles, " together with their moulds, " may be passed or placed on to or removed from the rack." The rack is made with several shelves, which are divided into compartments; each shelf is composed of two horizontal strips or rings of wood, one ring being " of larger diameter than the other, so that a space is left between the rings, in order that the heat may circulate through the moulds. The drying chamber is heated from a stove or boiler outside, and openings are provided in the outer wall in order to increase the circulation of air which passes out through openings or ventilators at the top of the drying room.

[Printed, 4*d*. No Drawings.]

A.D. 1863, December 11.—N° 3129.

CLIFF, JOHN.—"Improvements in apparatus for transmitting "motive power." These are, "in the driving gear of machinery, "more especially applicable to potters' wheels and lathes." "On "a horizontal shaft a disc wheel is fixed near the spindle carrying "the potter's wheel. The spindle rests and turns in a step or "socket, or it may be suspended in a sliding bearing, and is "furnished with a small horizontal friction wheel (covered or not "with leather), which slides on the square or circular spindle "with a head rib thereon, and is maintained at any desired "position or height by means of a rod or lever actuated by the "operator." Another mode of "effecting the same result is "to "cover the periphery of the small friction wheel with a layer of "leather or other soft or yielding material; or the small fric- "tion wheel itself may be made of wood segmentally; and to "determine the required speed by increasing or diminishing its "bearing surface or pressure upon the said disc by slightly "varying the distance of the lower portion of the spindle from "the disc by means of a handle-lever, spring, screw, or other "convenient contrivance." "In order to reverse the motion or "direction of the rotation of the spindle," increasing its length and carrying it "below the centre of the driving shaft to or near "or beyond the lower circumference of the disc, so that the small "wheel may be brought down below the centre of the shaft, or "in the other case beyond the circumference, and thus be driven "by the lower portion of the disc in a contrary direction. In all "cases the motion may be stopped by countersinking the central "portion of the face of the disc wheel, and bringing the small "wheel into such space or passing it beyond the circumference."

[Printed, 6*d*. Drawing.]

1864.

A.D. 1864, January 11.—N° 74.

WOOLF, SYDNEY.—(*Provisional protection only.*)—"An im- "proved mode of packing china and earthenware for firing." This consists in a mode of packing china and earthenware for firing so as "to avoid the marking of the face of plates, &c.,"

" while in the kiln, by the means of support used for packing " them in the seggars."

As now packed there are "three spurs or small tripods, the " feet of which rest on the back of the plate or dish, the apex " supporting the superimposed plate or dish;" thus twelve marks are "made on the back and face of every article thus " packed." To avoid this a series of annular supports are provided, and so constructed "that they will admit of being " piled one upon the other, and yet leave space between them to " receive a plate, dish, or other article intended to be packed for " firing without touching such article." In the upper face of these supports "recesses are made to receive a set of spurs by " which the plate or dish to be fired is supported face upwards. " Over the dish or plate thus laid a second anular support is " placed, its construction allowing of its resting on the annular " support below. On this, in like manner, spurs are placed to " receive a second dish or plate, and over this again is laid a third " annular support. In this way, therefore, a pile of china or " earthenware is raised equal to the capacity of the seggar."

[Printed, 4*d*. No Drawings.]

A.D. 1864, February 1.—N° 268. (* *)

PRINCE, Alexander.—(*A communication from Victor Duprat.*) —(*Provisional protection only.*)—" Improvements in the manu- " facture of artificial pavement, which improvements are also " applicable to pottery ware."

These improvements are thus set forth :—" I propose to mould " and dress particular kinds of clay, those especially which serve " to make pottery called artificial brown freestone, and also other " clays mixed according to their character with other substances, " and also with some materials which are fusible, and with pro- " ducts which partly attack the clay and cause it to run. The " materials are, firstly, clay and kaolin to form a plastic base; " secondly, silicious sand, freestone pounded or broken; baked " argillaceous cement employed to strengthen or solidify the clay, " and to obtain a fine or rough quality of pavement as may be " desired; thirdly, natural or artificial silicates, such as felspar " and minerals which contain it, lava, pumice-stone, obsidian " basalts of certain compound rocks such as granite; broken " glass, glass fritt, and iron slag, may be used instead of silicates " and sand, or cements, mica fluorite, cryolite, carytine, witherite,

" celestine, strontian, marble, lime, and oxide of iron. Refractory " clay mixed with sand gives an excellent product, tempered with " a concentrated solution of alkaline silicate of potash or soda. " Caustic alkalis give the same results. It is impossible to state " the proportions of the materials, as they may be varied to any " extent according to circumstances.

" Some of these processes afford a paste capable of being burnt " and made into pottery, possessing the qualities of porcelain at " a very small cost. All the mixtures may be colored by the aid " of earths or metallic oxides. After the pavement is moulded " into blocks or slabs it should, when dry, be subjected to pressure " to solidify it, after which it is to be baked or burnt."

[Printed, 4*d*. No Drawings.]

A.D. 1864, February 4.—N° 296.

EDWARDS, ISAAC.—(*Provisional protection only.*)—" Improve- " ments in saddles for supporting articles of earthenware and " china during the process of firing in glazing kilns or ovens." These are, in place of using " strips or rails of burnt clay (known " as saddles) each with one bearing surface," for the above purpose, " constructing saddles with more than one bearing " surface, two will usually be found sufficient, for supporting " articles of the kind above named. Convenient forms in clay " are obtained in lengths by shaping flat rails with raised edges " at each side thereof, or by forming pieces with flat bottoms and " concave upper surfaces, such concave upper surfaces describing " the ark of a smaller circle than that of the articles to be " supported thereon, so that the two terminating edges shall bear " the articles placed thereon."

[Printed, 4*d*. No Drawings.]

A.D. 1864, February 19.—N° 435.

SCRIVENER, ROBERT.—(*Provisional protection only.*)—" Im- " provements in the preparation of clay and other plastic " materials used for manufacturing purposes, and in drying " articles manufactured from the same." These are, first, in bringing " ' slip ' into a body of sufficient consistency to be used " in the manufacture of china, earthenware, stoneware, encaustic " tiles, and terra cotta;" it is placed on a layer of calico on a perforated frame " of zinc, copper, wire, or suitable material,"

beneath which is a chamber exhausted by a fan or air pump, put in motion by steam, hand, or other power, so as to form a vacuum. When a large quantity is required "two or more such "apparatus" are employed.

Second, in drying manufactured articles, among other things to obviate the necessity of entering the hot chambers, the drying rooms are of any form, the articles are placed upon shelves or bearers, there are openings at or near the top, and "pipes and "valves with a fan," so as to "keep up a constant current." When warm air is required the air is heated "in the room in "which the fan is placed by any known means," "or the fan is "placed in connection with a hot air chamber similar to those "used for hot blast in the manufacture of iron." In this case "the action of the fan is reversed, and the heated air is driven "along the pipes into the chamber, and the vapour is carried off "by the openings at or near the top of the said chambers." "A "series of chambers can be operated upon simultaneously when "required."

[Printed, 4*d*. No Drawings.]

A.D. 1864, March 8.—N° 579.

NEWTON, Alfred Vincent.—(*A communication from Friedrich Edouard Hoffmann.*)—(*Provisional protection only.*)—"Im- "provements in the preparation of clay for moulding bricks and "other articles." These are, "to obtain a less tedious process of "drying wet moulded goods," and "remove the risk which "attends the drying of goods in the green state by artificial "heat," it is proposed to take the wet clay, which is ready for moulding, and heat the same in a close vessel "to a temperature "of, say 158° to 212° Fahrenheit, without diminishing the water "contained in the clay, this clay when moulded can then be "dried in very hot air without being liable to crack." In preference the waste heat of furnaces or of steam engines is used. "It is still more advantageous to pulverize the clay, heat the "powder, and mix it up to a paste with hot water, or to heat and "wet the powder at the same time by steam." "When the "ground clay is heated to 390° to 480° Fahr. it may be added to "and mixed up with any mass of cold wet clay, provided that it "remains sufficiently wet for moulding and still keeps the heat, "which is indispensable for a further successful operation."

[Printed, 4*d*. No Drawings.]

A.D. 1864, April 23.—N° 1024.

WORSSAM, GEORGE JARVIS.—" Improvements in machinery " and apparatus for expressing liquids or moisture from sub- " stances." These, it is said, are " applicable to all manufactures " where semi-fluids are to be delt with," among which is named expressing " the water from clay for potters' use, whereby greater " toughness is secured with a total absence of air." The apparatus consists of a screw or worm, which is covered with a lining or casing " of copper, brass, or iron, or any suitable material, or " wirework, being perforated, grooved, or ribbed to admit of " drainage." There is " an outside casing in halves or parts " made of copper, brass, iron wire-work, or any suitable material " for the purpose, being perforated, grooved, or ribbed to admit " of drainage," but perforating is recommended. Between these two casings is " a cloth or cloths, also wirework if required, " through which the substance to be operated upon is pressed by " the means of a force pump worked by hand or any other suit- " able power," feeding the machine by four pipes into the top near the handle. There is a cover with stuffing box and feed chamber, and at the other end is a cover with discharge door, " through which the material or matter after being pressed is " forced by the means of the screw or worm." In some cases it may be necessary to use blades, scrapers, or knives in place of or together with the screw or worm. There is a trough into which the liquid runs after being pressed.

[Printed, 1*s*. Drawings.]

A.D. 1864, May 11.—N° 1196. (* *)

GISBORNE, THOMAS MATTHEW.—" Improvements in kilns for " burning bricks, tiles, and other earthenware or ceramic articles, " limestone, and ores." A number of kilns so constructed that the combustion of the fuel takes place at the one end, whilst the " chimney communicates at or near the floor with the other end," are combined in such wise that the " chimney end of one kiln can " communicate at pleasure with the " " combustion end of another " kiln, or with a separate chimney or flue." The kilns are constructed to taper from the combustion end to the chimney end " side by side, and alternately in reversed positions," disposed either in parallel lines or in a circle. The aperture through which they all communicate is provided with a damper, " which, when

" the kilns are burning on the continuous system, is removed, " whilst the chimney or flue is then closed." " When the kilns " are required to burn separately the communications between " them is closed " by the damper, and the chimney opened. The products of combustion from the kiln that is being fired can thus " pass among, and heat the contents of one or more kilns that are " going to be fired," while " the air for supporting the combus- " tion in the kiln that is being fired " can pass through " the " contents of one or more kilns that have been fired."

[Printed, 1*s*. Drawing.]

A.D. 1864, May 18.—N° 1249.

BOULENGER, Hippolite Alexandre Celestin.—" Im- " provements in the method of moulding and shaping plates and " other similar articles." These are, " the paste or mass is pre- " pared in the ordinary way, and divided into balls, each of a " sufficient size to form a plate, the ball is then placed between " two pieces of silk, or similar tissue, the object of which is to " maintain the paste, and to serve in removing it from the mould " in shaping it. The moulds can be of any metal unacted on by " water, and of any desired shape, the paste is placed in the " mould between the pieces of silk, and subjected to sufficient " pressure to give it the required form, after which the silk on the " top is removed, and the plate placed on its face on a mandril, " the silk on the bottom of the plate is then withdrawn, and the " mandril is put in motion, during its revolution all the super- " fluous paste is removed by a cutter, the plate is then allowed " to dry."

[Printed, 4*d*. No Drawings.]

A.D. 1864, June 23.—N° 1576.

COCHRAN, Robert.—" Improvements in the system or mode " of treating clay for potter's use in forming articles in pottery, " and in the machinery, apparatus, or means employed therefor." These are, first, " in the employment of machinery for stamping " out the batts from which the finished article is to be made." The machine, by preference, employed " consists chiefly of two " faces or discs, both made of stucco or other suitable material, " fitted and fixed on to a shaft, block, frame, or frames, moving " in suitable slide bearings, one or both of which have a recipro- " cating or alternate motion imparted to them by excentrics, cams,

" or cranks keyed on an approximate revolving shaft," or by any other means. The plates of stucco are arranged in any convenient manner, " and they are regulated to produce a batt or batts of any " desired thickness."

Second. " Stamping articles in pottery by such a machine, or " one in most respects similar to that herein before referred to." The articles most advantageous to be thus stamped, "are plates, " dishes, saucers, bowls, cover dishes, and in general every similar " kind of article in pottery." In place of being flat, " the faces " of the machine are made of various forms to suit the two sides " of the article to be produced." The motion of the machine is regulated " that the faces or stamps approach each other to any " degree of precision, a space being left between them equivalent " in width to the thickness of the article to be produced. The " motion or amount of travel, as well as the distance between " the stamps is regulated by an adjustible cam or crank fixed to " an approximate shaft, or it may be regulated by any other " convenient arrangement of machinery."

[Printed, 10*d*. Drawing.]

A.D. 1864, June 24.—N° 1596. (* *)

CHAMBERLAIN, HUMPHREY, CRAVEN, JOHN, and WEDEKIND, HERMANN.—(*Partly a communication from Friedrich Hoffmann.*)—" Improvements in kilns or ovens for burning bricks, " tiles, pottery ware, limestone, cement, and other substances." They relate to the kiln " for which Letters Patent were granted " to Alfred Vincent Newton, as agent for the said Friedrich Hoff- " mann, No. 2918, A.D. 1859."

A kiln is constructed in a long straight line; at one end is the fire-place, and the opposite end opens into a chimney. In the roof of the kiln are made a number of openings with covers, from which the fuel is to be introduced into the kiln amongst the goods being burnt. The entire length having been filled with bricks, a fire is lighted in the fire-place, and when the end of the kiln is sufficiently heated, fuel is introduced from the openings in the top, advancing gradually from the fire-place to the chimney. The air as it enters thus, first passes through the burnt bricks, cooling them down, and conveying their caloric to the bricks in front. The kiln may also be subdivided into compartments to be used " as drying chambers, whilst the other portions of the " kiln is burning." The hot air is brought " from the cooling

" portions of the kiln " by means of a movable pipe adjusted to any of the holes in the roof, and when the bricks are sufficiently dry the doors and flue may be removed.

Pottery kilns are built in several compartments, with a chimney in common, and a flue opening direct into the chimney from the last compartment of the series. The fuel can be introduced from the roof into a fire-place for each compartment except the front one, which is supplied from a door. A fire is lighted in the compartment the farthest from the chimney, and the products of combustion pass through all the compartments on their way to the chimney. The next compartment is then fired, and its supply of air passes through the first compartment, and so on till the last compartment nearest the chimney is reached. Kilns so constructed may be transformed into a continuous kiln, as specified in Patent No. 2918, A.D. 1859.

The second part of the invention consists in so constructing a ontinuous kiln that warm air may be taken from any of the eated chambers "to any of the other chambers, for the purpose of drying green bricks." The kiln can be divided into a number of compartments, each provided with a door for the introduction of the goods. From each compartment there extends a flue from above, opening into an annular smoke chamber surrounding the chimney in the centre. The inlet orifices of the flues are regulated by a valve. These flues can be connected to the annular passage, which itself can communicate with other flues " which " lead from the lower portions of the compartments of the kiln " to the smoke chamber." Supposing the kiln to contain 12 chambers, and designating each one by a numeral, we may assume that chambers 3 and 4 are shut off from the others by doors made for the purpose, and that these two chambers contain green bricks. Chamber 5 is being filled while chamber 6 is being emptied. Chambers 7, 8, 9, and 10 contain burnt goods in the act of cooling, " whilst the chambers 11 and 12 are being fired." The hot air thence passes through the goods in the chambers 1 and 2, and being kept from entering directly into 3 and 4, passes by the bottom flue into the smoke chamber, and thence to the chimney. The fresh air enters by the doors of 5 and 6, and runs round through the chambers 7, 8, and 9. A portion of this air passes through the chambers 10, 11, 12, 1, and 2, and thence by the flue leading from the lower part of that compartment to the chimney. Another portion enters one of the flues which lead from the upper

part of each compartment, and as the valve on its end is closed, and the plug leading into the annular chamber is open, it enters the latter and traverses through the open valve in the flue into the chamber 4, and thence into 3. It finally escapes by the flue leading from the upper part of compartment 3 into both the smoke chamber and chimney. By opening and shutting a fresh set of dampers the operation can be repeated with other compartments.

The third part of the invention consists in providing a separate collecting flue and chimney for carrying off the steam evolved in drying green goods. "A separate steam collector" communicates by passages with a steam chimney built inside the smoke chimney. The hot air for drying the bricks enters the chambers in the way employed in carrying out the second head of the invention, but instead of passing off with the steam into the smoke chamber, they are first conducted into the steam chamber, and thence into the internal chimney. The products of combustion pass off from the smoke chamber into a chimney surrounding the steam tube.

In burning pottery a closed chamber may be built inside each compartment, but with a free passage along the sides and under the bottom. In burning limestone an arch is built so as to extend downwards from the roof between each compartment; or the chamber is composed of side walls only, with arches at intervals, the substances being covered over by loam and earth. With materials subject to fusion under great heat, the fire-places are "enclosed in an open setting of fire-bricks or tubes."

[Printed, 1*s.* 6*d.* Drawings.]

A.D. 1864, August 2.—N° 1920.

JOHNSON, JOHN HENRY.—(*A communication from Dominique Grosjean.*)—"Improvements in the manufacture of glazes or "enamels for pottery ware." These are, "the manufacture of "innoxious glazes or enamels for pottery ware of all kinds," as afterwards described, and "the application and use to pottery "ware of all kinds of innoxious glazes or enamels of the nature" of those afterwards described. A fritt is first prepared by taking 20 parts of baked or unbaked clay ("constituting a multiple "silicate of silicate of alumina, of peroxide of iron, of lime, and of "potash," preferring it in the calcined state to contain about 3 times as much silica as alumina, and from ¼ to 2 per cent. of

potash or soda), 8 parts of borax, 8 parts of salts of soda, or equal parts of salts of soda and of potash, and 4 parts of sea salt. The whole is put into a crucible and semi-fused, is thrown into cold water, the fritt is obtained, and reduced to powder is mixed with about 30 parts by weight of the above clay, which has been washed and dried in the air. This mixture is ground in a mill and the result is one of the "enamels or glazes herein-before referred to, "which may be applied by dipping the articles therein in the "usual manner." Colors are obtained by adding to the glaze any well known coloring matters, avoiding "heavy metallic "oxides of a poisonous nature." To produce highly transparent enamels or glazes white quartzy sand is substituted in mixing with the fritt in place of the clay. This sand is first heated to a red heat, and then thrown into cold water, after which it is reduced to a fine powder. There may be introduced into the fritt lime, magnesia, baryta, &c., fluoride of calcium, phosphate of lime, and various silicates. Fayence ware is coated with enamels or glazes, as described, "prepared with white silicates of alumina."

[Printed, 4*d*. No Drawings.]

A.D. 1864, August 9.—N° 1981.

CLARK, WILLIAM.—(*A communication from Fréderic Kuhlmann.*) —"Improvements in the means of producing ornamentation on "porcelain, glass, metal, and other surfaces." These are, first, "the production of ornamental designs similar to the frosting of "window glass, but varied in arrangement by means of solutions "of crystallizable matters applied in thin layers on suitable "polished surfaces."

Second. "Fixing the design by means of varnish, collodion, or "more effectually vitrification when enamels are employed in the "crystallizations."

Third. "Employing vitrification as a means of fixing the frosted "designs in which enamels or vitrifiable matters have been "introduced after being diluted in water, and applied in thin "layers on the glass, to be afterwards submitted to a freezing "process."

Fourth. "Reproducing crystalline designs with crystallizable "solutions, saline, or otherwise, and also frosted designs by the "aid of photography or galvanoplasty, and by pressing the cry- "stalline designs on sheets of copper, the operation in the case "of frosting being effected at low temperatures," also, "the

" reproducing of designs, frosted or otherwise, on paper or fabrics " with copper plates."

Fifth. " Applying these impressions for the manufacture of " bank note and other similar paper."

Sixth. " Reproducing, by means of engraving, the crystalline or " other designs produced on glass with a brush by transfer from " the crystallizations, or by the application with a brush of " metallic fluorides, and particularly those of copper and zinc, " said designs being submitted to the action of hydrosulphuric " gas, or preferably to that of concentrated sulphuric acid."

Seventh. Reproducing these crystalline designs on porcelain or glass by exposing the articles so covered with the designs to the action of the vapours of hydrofluoric acid. The articles engraved, according to these two methods, may be afterwards gilt or silvered in the ordinary way of silvering looking glasses.

[Printed, 4*d*. No Drawings.]

A.D. 1864, August 10.—N° 1989.

JOHNSON, John Henry.—(*A communication from Edouard Dodé.*)—(*Provisional protection only.*)—" Improvements in gilding " glass and vitreous surfaces." These are as follows:—First, 100 parts by weight of platina are dissolved in nitro-muriatic acid, evaporated to dryness, and the product mixed with essence of lavender or other suitable essential oil; 25 parts by weight of litharge or other suitable compound of lead are next ground with a similar essential oil on a glass surface with a muller. These two products are then ground together and diluted with a similar essential oil are ready to be applied with a fine hair pencil to the surface to be gilt. The glass or fibrous surface is then subjected to a high temperature in a muffle for a short time, " after which it " will be found perfectly brilliant and ready to receive the gilding " or coppering." The second operation is the application of a coating of copper or of copper and zinc to those parts which have been already coated with platina; this is effected by the " well " known process of electro-galvanic or electro-magnetic deposition " of metals, and need not be described." The third operation is effected by " a simple steeping or by the aid of a battery;" this operation requires but a small quantity of gold. " If preferred, " palladium, osmium, iridium, titanium, silicium, or other white " non-oxidisable metals may be substituted for platina, but they " will be found to be much more costly."

[Printed, 4*d*. No Drawings.]

A.D. 1864, September 23.—N° 2338.

WOODBURY, WALTER BENTLEY.—"An improved method of "producing or obtaining, by the aid of photography, surfaces in "'relievo' and 'intaglio' upon albuminous, vitreous, metallic, or 'other suitable materials." This consists as follows:—"A first "'mould,' consisting of graduated thicknesses of material," is obtained by dissolving one part of sugar to eight parts of gelatine, clarifying with albumen, to every ounce of this solution adding a solution containing ten grains of bichromate of ammonia, mixing them together, and when nearly cool spreading the mixture on clean glass to the thickness of about one-eighth of an inch; in about five or six hours when the gelatine has become solid it is cut into pieces and stripped from the glass. The side next the glass is laid on a photographic negative, excluding all air bubbles, and the whole "placed in the solar camera or other condenser of "the rays, by the use of which the lines in the negative are pro- "duced as clearly at the back of the gelatine as the front." When sufficiently exposed, known "by the back of the gelatine "being slightly depressed in the high lights of the negative, the "gelatine must be lifted from the negative and fastened by "india-rubber cement to a piece of stout card coated with lac "varnish, and held under a stream of hot water until the not acted "on parts are washed away. An image is thus produced, in which "the lights are depresssed and the shadows raised." "It must "be allowed to get the surface dry and then brushed over with a "soft brush" with bronze powder, plumbago, &c., "to give it a "metallic coating, and then the subsequent process of electro- "typing and casting is to be performed by any ordinary method." Other modes of producing strips or sheets of chromatized gelatine are described. "When the copper coating is removed from the "gelatine the mould is obtained and may be mounted in lead or "gutta percha," and "used to produce repetitions or copies in "any semi-transparent material." "To produce a 'bas-relief' or "'intaglio,' I take a solution of any transparent color in water of "such a strength that at three or four inches deep it may be "opaque, and let the 'bas-relief' lie in this, so that by photo- "graphing this a negative is obtained, in which the prominent "parts are the lightest, and the furthest parts the darkest. By "printing from this negative, a mould in gelatine will be the "result, from which a cast taken in metal or fusible material will "be a copy of the original."

[Printed, 4*d*. No Drawings.]

A.D. 1864, October 13.—N° 2524.

CLAUSS, Louis.—(*Provisional protection only.*)—"Improve-
"ments in ornamenting articles of china, earthenware, and other
"materials." These are, printing "in one colour only the paper
"or material from which the design is to be transferred," and
applying "the other color required to the paper or surface so
"printed by painting by hand or by means of stencil plates."
"The transfer is effected to the article to be ornamented, and the
"picture is fixed thereon" by burning or otherwise. In some
cases the picture is produced "on the paper or transfer surface
"entirely by painting or stencilling or both, without the aid of
"printing." "The colors for printing or stencilling are prepared
"with essence of turpentine," and "mixed with highly boiled oil
"to a suitable consistence." "To effect the transfer, both the
"article to be ornamented and the pictures to be transferred are
"coated with varnish thinned with turpentine, and before the
"layers are completely dry, the back of the transfer is moistened;
"its face is then applied to the article, and made to adhere firmly
"to it by pressure, and the paper is then stripped off."

[Printed, 4*d*. No Drawings.]

A.D. 1864, November 10.—N° 2795.

BOOTE, Thomas Latham, and BOOTE, Richard.—"Im-
"provements in the manufacturing of pottery and such like
"wares." These are said to be "in manufacturing plates, saucers,
"dishes, bowls, and other similar dished or concave articles from
"pulverized clay or such like material in a dry or partially dry
"state," "arranging the clay or other material employed in or on
"the moulds in such manner that in making articles of a convex
"and concave form each part may receive an equal amount of
"pressure," substantially as follows:—A metal mould is made in
"two or more parts and of the shape of the article to be manu-
"factured." One part or parts gives form to or shapes the outside
and the other part or parts the inside of the article. The lower
part of the mould is filled with pulverized clay or other material,
and "if this lower part is intended to give shape to the outer or
"convex side of the article," a part of the clay or other material
is removed, "leaving that which remains to correspond as near as
"possible with the inner or concave side of the article." "If, on
"the other hand, the lower part of the mould is intended to give

" shape to the inner or concave side of the article " the clay is left " to correspond as near as possible with the outer or convex side." The upper part of the mould is then lowered into or upon the lower part, and after sufficient pressure is raised and " the article " may be removed."

[Printed, 4*d*. No Drawings.]

A.D. 1864, December 6.—N° 3048. (* *)

MARTIUS, Carl Alexander—(*A communication from Johann Baptist Obernetter.*)—" Improvements in the application of photo- " graphy to the ceramic art or to glass."

" This invention consists, firstly, in a combination of processes " whereby photographic pictures are obtained, applied to, and " burnt in upon articles of porcelain or glass; and, secondly, in " a peculiar method of causing the said photographic pictures to " be composed of materials which can be fused or enamelled upon " ceramic articles including glass."

A glass plate is coated, in the ordinary way, with a sensitive solution containing gum, sugar, glycerine, and bichromate of ammonium; the plate is then dried, in the dark, in a drying stove. A positive picture is placed on the prepared surface of the plate and the combination is exposed to the action of light, for the time requisite to impress the image. The plate, on which the image is now slightly visible, is next treated with a mixture containing porcelain colour with its flux and some dry powdered soap; this operation is continued until the requisite density is attained, the porcelain colour and its flux being deposited upon those parts of the plate which were protected from the action of light by the superposed positive. To effect the removal of the picture in porcelain colour from the supporting surface, it is coated with collodion, dried and immersed in alkaline water. The washed film is then pasted, picture side undermost, on the ceramic article. The picture, so adapted, is dried spontaneously, and the collodion film is dissolved therefrom by the action of solvents, " after which " the article with its applied picture is burnt in an ordinary muffle " furnace, as conducted in the usual process of enamelling."

[Printed, 4*d*. No Drawings.]

A.D. 1864, December 16.—N° 3120.

BROWN, George.—(*Letters Patent void for want of Final Specification.*)—" An improvement in the construction of cylinders used

" in the manufacture of articles of pottery, such as pipes, tiles, " hollow bricks, and the like." This consists as follows:—In place of " the cylinders through which the clay or other substance " passes after leaving the pug mill, and prior to its being manu- " factured " into the above articles, being " formed with an even " or smooth surface," " forming the internal surface of the cylin- " ders, and through which the clay passes, with a series of ribs, " grooves, or projections thereon, set by preference in a spiral " form, and arranged at distances apart according to the quality " of the clay under treatment."

It is said by so doing it is found " that the clay is driven or " forced through the cylinder by the ordinary screw with much " greater facility and effect than when the surface of the cylinder " is smooth."

[Printed, 4*d*. No Drawings.]

A.D. 1864, December 29.—N° 3242.

BAUGH, BENJAMIN.—" New or improved machinery to be used " in the manufacture of enamelled wares." This consists, first, " in the arrangements or combinations of the parts of machinery " be used in the manufacture of enamelled wares," that is to say, " machinery in which the powdered glass or enamel is carried in " a hopper or receptacle travelling over the articles to which the " enamel powder is to be applied, the enamel powder being shaken " from the said hopper by a series of blows given to the said " hopper." The hopper with wire gauze bottom is supported at its sides on rails, and a horizontal screw parallel to one of the rails and of the length of the machine, engages with a screw box fitted on the hopper; motion is given to the screw by a band and pulley. Beneath the screw, and parallel with it, is a fixed rack, a toothed wheel on the hopper engaging with the rack, and when the hopper is moved the tooth wheel is rotated by the said rack. This motion is transmitted by toothed gearing to two shafts at opposite ends of the hopper, each having a series of cams on them, each of which, by the rotation of the shaft, is made to lift and afterwards liberate a spring tappet, which strikes the end of the hopper, and shakes a quantity of powder therefrom. Modifications of the above are described.

Second, " the arrangement or combination of the parts of ma- " chinery to be used in the manufacture of enamelled wares." When the articles are small, the articles are supported on an end-

less band having an intermittent motion, the powdered glass or enamel being dredged on the articles by means of an inclined sieve having a vibratory or reciprocating motion. A modification of this is likewise described.

[Printed, 1*s*. Drawing.]

1865.

A.D. 1865, January 28.—N° 249.

BURQ, VICTOR.—"Improvements in filtering apparatuses." These are, in reference to this subject, first, "the filtration in the "cold or in the heated state, on a large or on a small scale," of a great number of different substances, among which are named ceramic slips or paps "by means of thin blades, plates, slabs, "diaphragms, or other similar mediums constructed of either "natural or artificial suitable porous stone, or suitable porous "filtering compounds," resting on and being cemented by means of suitable prominent parts of themselves, to a suitable resting plate or plates, or resting on and cemented to each other or kept together by means of brackets, bolts, rods, or tubes, to impart to them sufficient strength to resist the pressure of the liquid or substance to be filtered, also for allowing the filtering to take place from either side or surface of them, and thus, if required, procure the cleansing of them by causing the filtration to take place for some time in an opposite direction to that in which the same had taken place, before which cleansing may be aided by brushes or by the current of the water in which the apparatus is immersed.

Second, an arrangement of filtering medium as above may be "kept immersed in a canal, running stream, or river, or other "similar large body of water."

For manufacturing the artificial porous diaphragms using porcelain or other suitable clay or ceramic mass thoroughly mixed with "wood dust, powdered wood, or animal charcoal, peat, or "other minutely divided combustible matters," which are burned during the baking or firing of the slabs, plates, or diaphragms, thus forming in them the required pores. Should it be desirable to have not only a filtering, but likewise disinfecting medium, "they may be formed of suitable carbonaceous matters, such, for

" instance, as finely pulverized bituminous coal, coke, breeze, " wood, or animal charcoal to be thoroughly mixed with tar, " clay, or other suitable aglomerating material, and after being " moulded they are baked in air-tight vessels so as to cause only " a suitable aglomerating, baking, or hardening of the mass to " take place without alterating (altering?) the porosity and car- " bonaceous nature of the same." Several arrangements of these filters are described, and the general arrangement and combination of the parts are claimed.

[Printed, 1*s.* 6*d.* Drawings.]

A.D. 1865, February 1.—N° 276.

MEAKIN, James.—(*Provisional protection only.*)—" A new mode " of placing china, stone, and earthenware in saggars, ovens, and " kilns, or other receptacles for firing the same." This consists in constructing and using " a saddle pin, or rib of clay or other " material with projecting lateral teeth made of various sizes." Placing the articles to be fired between these teeth. It is said that " by this means marks of indentations upon the face and " edge of such articles " are avoided, and " the inconvenience of " the modes now in use are got rid of," while " a great saving " of labour and expense is effected, and a much larger quantity of " ware can be placed in such saggars, ovens, and kilns than the " present modes allow of."

[Printed, 6*d.* Drawing.]

A.D. 1865, February 15.—N° 435.

EMERY, Francis Joseph.—(*Provisional protection only.*)—" Improvements in ornamenting china and earthenware, and in " preparing materials to be employed therefor." These are, applying " the color to the surface of the china or earthenware " " by means of crayons compounded of a suitable color for the " purpose, and also a flux suitable for vitryfying the color when " subjected to heat. These materials " are, by preference, made up into the form of crayons by combining them with wax, but they may be otherwise combined. The design to be produced is drawn on the surface with the crayon, " the china or earthenware " is then submitted to heat, by which the colors are fixed." The surfaces to be ornamented are either " glazed or unglazed; when " glazed, the surface of the glaze should be rendered rough by " applying a further glaze to the surface, which is only partially

" vitrified. When the color is applied by the crayon to an un-
" glazed surface, the surface may be glazed after the colors have
" been applied to it."

[Printed, 4*d*. No Drawings.]

A.D. 1865, March 22.—N° 805.

WRIGHT, JAMES.—(*A communication from Joseph Muir.*)—" Improvements in the process of preparing kaolin or china clay " and other clays for potters' use, and for expelling water from " other earthy deposits." The clay having been prepared in the usual way after subsidence from water, " when the supernatant " water has been removed, it has also been the practice to further " dry the mass by evaporation induced by heat;" but by these improvements " the pap is placed in a cylindrical vessel provided " with a rotating mechanism, and the vessel is set whirling at a " rapid rate, and the centrifugal force communicated to the mix-" ture causes it to be thrown outwards " on to the sides of the vessel; the liquid in the centre of the vessel is drawn off when the whirling of the vessel is stopped " by a pipe leading out of the " bottom of the vessel, or by a syphon." If it is " desired to dry " the materials more than would be effected by carrying on this " operation at the ordinary temperature, a steam jacket may be " placed around the vessel to which steam may be supplied " through the shaft of the whirl, which in that case should be " hollow."

[Printed, 8*d*. Drawing.]

A.D. 1865, April 21.—N° 1117.

SCARRATT, WILLIAM, and DEAN, WILLIAM.—" Improve-" ments in taking impressions from the grain of wood and trans-" ferring the same on to various surfaces."

These are, in reference to this subject, as follows:—Supposing a board of oak or other wood is employed, its surface is planed, coated over with a solution of one oz. of American pearlash to one quart of hot rain water; it is then sand-papered and rubbed over with linseed or other oil, when it will be ready for printing. The pores of the wood are kept clean by a brush with mineral or common turpentine, or naptha, or a mixture of them, and well rubbed with sawdust. If, through neglect, the color should set in the pores of the board it must be coated with soft soap, and a

solution of soda or pearlash, allowed to "remain for 8 or 9 hours, "then scrubbed with hot water." The colours which are used for clay articles are mineral, as they alone will stand the requisite amount of heat to fix them, and are laid on by means of a substance or of a roller of an elastic nature. The paper or other material on to which the impression is taken has a coating of size given to it, composed of "¼ lb. of soft soap, and 2 ozs. of common "washing soda, put with 3 quarts of hot rain water, and mixed "well together." The transfer on to the article of the design "is "effected by laying the printed surface of the paper on to the "article" and rubbing the back with a soft substance or a roller, and after a short time removing the paper." "For inlaid or tes- "selated patterns, oak and other woods, solid or in veneer are "used, and the separate pieces are arranged in patterns according "to taste;" these pieces are secured to another piece of wood of the requisite thickness, and used either in the flat board or in cylinders, the surfaces being prepared and used as described, either for decorating wood or any other surface.

[Printed, 4*d*. No Drawings.]

A.D. 1865, April 22.—N° 1130.

GRAINGER, Alfred, and GIRDLER, Charles Mitchel.—"Improvements in the manufacture and application of devices "and representations to tombstones and in other public or "exposed situations for various purposes." These are, the preparation of likenesses, or representations, or designs on porcelain or enamel to tombstones and other monumental purposes; also representations of goods emblematical of or showing the goods of certain trades may be for advertising purposes in exposed situations. "In preparing these likenesses or devices we either take "a photograph on the ceramic ware at a suitable stage of the "manufacture, which photograph is rendered permanent by "glazing and burning in the usual way of surfacing and com- "pleting pottery ware, or it may also be applied from a print or "printing, to be painted directly on the earthenware, and after- "wards glazed and burnt in the usual manner of treating pottery "or earthenware." "In addition to the likeness produced by "the sun, the effect may be heightened by coloring or painting "by the application or metallic colours in the ordinary manner of "painting or ornamenting porcelain ware, and as well understood. "Instead of taking the photo from the negative at once on to the

" porcelain, it may be copied and printed or otherwise applied on " a suitable tissue, and from thence applied to the porcelains " and burnt in the ordinary manner of applying ornaments and " representations to porcelain ware."

[Printed, 4*d*. No Drawings.]

A.D. 1865, April 26.—N° 1174.

SMITH, WILLIAM HENRY.—" Improvements in photographing " upon wood, and in the preparation of wood, canvas, silk, glass, " and other substances, for the purpose of receiving and retaining " impressions." These are, in reference to this subject, in preparing china, earthenware, and glass for the reception of photographic impressions, the application of two substances to the object on which it is desired to produce a photographic impression. The first substance with which the substance is saturated is called a base; this is composed of " 12 grains of valata (balata?), " gutta percha, or india-rubber to one ounce of benzole or other " hydrocarbon," preferring valata (balata?) and benzole. A receptive is next prepared by mixing 12 parts of gelatine and 5 parts of honey in 250 parts of water, this is allowed to decompose (dissolve?), and when liquid one ounce is taken and there is dissolved in it a chloride or a bromide (if chloride of cadmium, 2 grains), 1 grain of the tincture of iodine, and 1 grain of tartaric, citric, or other similar acid. Again one ounce of this is taken, adding a chloride or bromide (if chloride of cadmium, 4 grains), 3 grains of tincture of iodine, and 1 grain of tartaric, citric, or similar acid, and a coating applied which is sensitized by immersing in a bath of 35 grains of nitrate of silver to 1 oz. of water; it is then withdrawn, and while wet is coated with a solution of 10 parts gelatine, 5 parts honey, 300 water; and when dry print, tone, and fix by a bath of sulphocyanide of ammonium and chloride of gold, &c.

[Printed, 4*d*. No Drawings.]

A.D. 1865, April 27.—N° 1184. (* *)

GRAINGER, ALFRED, and GIRDLER, CHARLES MITCHEL.—" Improvements in the production of portraits or likenesses on " certain materials by means of photography."

" Our invention relates to the production of photographic " likenesses on porcelain or ceramic ware, and consists in pro- " ducing the photograph or likeness of a person or thing on

" the ware itself instead of first taking it on paper or other " material, and then transferring it to the earthenware to be " afterwards burnt or glazed as heretofore. We prepare a plate " or other article of the size and shape required of porcelain " or other ceramic material, which we glaze with a transparent " glaze and burn it on as usual; on this we take the likeness " by means of photography, we then paint or color the photo- " graph taken by hand or by other application of color, then " glaze or enamel it again, and burn and complete the article " bearing such portrait or likeness. Instead of coloring the " photograph before glazing a second time it may be left un- " colored, and with the effects produced by photography only, " which is glazed and burnt in as before mentioned. Borax or " other suitable flux may be used for the glazing, which is applied " and rendered fluid by heat, as well understood in glazing " ceramic wares."

The photographic representation may be produced upon " metal " or other material," " which in other respects is treated and " prepared as herein-before described, the glazing and baking " rendering the representation enduring and applicable as herein- " before described with reference to plates or pieces entirely of " ceramic material."

[Printed, 4*d*. No Drawings.]

A.D. 1865, May 23.—N° 1414.

HETT, ALEXANDER.—" Improvements in the treatment of clays " and other materials with which they are mixed when used in " the manufacture of china, porcelain, earthenware, and other " like wares, and in ornamenting or decorating china, porcelain, " earthenware, and other like wares." These are, first, " using " the electro-magnet, constructed and arranged " as afterwards described " for the purpose of removing iron from clays and other " materials " used in the above manufacture. The electro-magnet is " composed of a disc or plate of soft iron having a convoluted " groove or recess cut out of or otherwise formed in one of its " surfaces for the reception of a bundle of small covered copper " wires forming a coil." The spaces otherwise in the face of the disc are all filled up with some suitable material, and the disc is let into and forms part of the bottom of a trough or shoot through which clays mixed with a sufficient quantity of water or slip may be passed after connecting " the ends of the coil of copper wire

" with the poles of a suitable galvanic battery or an electro-mag-
" netic machine." To clear the disc it is disconnected from the battery, &c. and the iron washed off.

Second, using the transfer paper afterwards described "in the " manner and for the purpose herein set forth;" 99 grains of arsenious acid in powder are mixed with 143 grains of common soda with 8 ozs. of soft water (these proportions may be varied), and boiled until complete solution; when cold, six pints of serum of blood, as colorless as possible, are added, and the whole reduced to two pints by exposure to the atmosphere or a temperature not exceeding 165° F.; after filtering, the transfer paper is prepared by coating paper on one side "by sponging or brushing " over twice or oftener, if necessary, one side only" of any suitable paper, drying between each coating. On this paper is printed by chromolithography any required complete pattern with the mineral colors or metals mixed with varnish, or with varnish, afterwards dusting on the colors or metals. The ware is coated with varnish, the pattern placed between damp blotting paper is pressed upon the ware, the ware immersed in water, the paper removed, and the pattern left on the ware, glazed or otherwise, burned in.

[Printed, 6*d*. Drawing.]

A.D. 1865, June 10.—N° 1582.

BROOMAN, Richard Archibald.—(*A communication from François Durand.*)—"Improvements in kilns for firing porcelain " and other ware." These are, "constructing kilns for firing " porcelain and other ware with an annular fire-place and a " central fire-place," substantially, as follows:—"An annular " fire-place is constructed within the lower circumference of the " kiln," and another fire-place is built in the centre of the kiln. The saggars or ceramic products to be fired are placed in the annular space between the two fire-places; "lateral passages are " formed from the fire-places to this space to allow contact of the " flame and products of combustion with the saggars." "The " charging of the fuel and the saggars or ceramic products is " performed through a door at the side of the kiln," which is afterwards luted. The central fire-place when charged is closed by a plate to cause the heat to escape only by the lateral passages. " Below the kiln is a circular chamber," with doors to regulate the air into which the attendant can descend to get at the fire-places. Sight holes are fitted in the ordinary manner. The kiln

is divided horizontally above the fire-places by a partition provided with openings for the passage of the flame. In the space above this partition the "products which are to receive a first degree of "firing" are placed.

[Printed, 8*d*. Drawing.]

A.D. 1865, June 16.—N° 1627.

GEDGE, WILLIAM EDWARD.—(*A communication from Georges Gros.*)—"An improved method of and apparatus for manu- "facturing pottery." This is said to consist in the use "of a plug "and intermediate envelopes or caps made of felt of a woollen, "cotton, or silken fabric, of hide, of india-rubber, vulcanized or "not, or of any analogous material offering the requisite sup- "pleness." A ball of clay is placed in the cap, which is itself placed in the mould, then the crank shaft being set in motion the plug the shape of the interior of the mould, covered by a cap of the same shape, comes down, introduces itself into the mould, crushes the ball of clay and causes it to rise regularly along the sides of the mould and when the plug has arrived at the end of its downward journey the space comprised between the plug and the mould "(which is equal to the thickness to be given to the "vase) is filled with clay and constitutes the vase." The excess of clay is separated by the junction of the edges of the plug and mould. The plug is lifted up out of the mould by the crank shaft, and by a jointed pedal movement, a rod is made to press gently upon the bottom of the vase and gradually rise it up out of the mould. The supple envelopes partially absorb the moisture from the clay, "causing it to dry more quickly."

[Printed, 8*d*. Drawings.]

A.D. 1865, August 11.—N° 2084.

ARMSTRONG, ROBERT WILLIAMS.—(*Provisional protection only.*)—"Improvements in machinery for moulding hollow articles "in earth, clay, and other like materials." These are, the "mould consists of a cylinder fixed on a bed," in which is placed a "die or mould, which gives form to a part or the whole of the "inside of the article required to be produced." This mould has a spring underneath, "which tends constantly to raise the "mould to its required working height." A rod and set pin regulates the play of the spring and position of the mould. The

mould depressed to its lowest point is stopped by and rests upon a bed. Outside the above cylinder is "another mould or tool, "free to rise and fall, and give shape to a part or the whole of "the exterior of the article to be produced." These moulds are in as many pieces as may be necessary for the shape, escape of the gas, and easy delivery of the article when made. Instead of pressing up the inner mould by a spring employing "a rack and "pinion, which will yield on pressure being applied." The material dry or nearly so or plastic is introduced between the moulds, pressure is applied by "screw, hydraulic, or other press," the pressure is continued "until the whole of the materials con- "fined between the moulds and plunger is thoroughly consoli- "dated. The article produced will be found to be evenly and "uniformly compressed and in a condition fit for shrinking in "firing in ovens equally and proportionally."

[Printed, 4*d*. No Drawings.]

A.D. 1865, November 9.—N° 2891.

NEWTON, WILLIAM EDWARD. — (*A communication from William Gibson.*)—"Improvements in preparing the surfaces of "paper, leather, woven and other fabrics, and substances for "receiving photographic pictures, engravings, lithographs, and "prints, and for rendering such substances fire and water-proof." These are, "the production of an insoluble enamel or surface in "or upon paper, cloth, or other textile fabrics," "wood, leather, "glass, porcelain, earthenware, metals, india-rubber, gutta percha, "and paper maché compositions, by the successive application "thereto of an adhesive mixture or body and an astringent "mixture or solution." Also "insoluble plates or panels" made of the same adhesive mixture and astringent. The adhesive mixture is "composed of gelatine or any animal glue, or albumen, "or gluten, or any mixture of any two or more of said substances, "with clay, or other aluminous earth, or oxide of zinc, or a "mixture of clay and zinc." In reference to this subject porcelain and earthenware "may be enamelled and treated by "successive application to them of the gelatinous body or "mixture," and "subjected to the action of any suitable "astringent solution which is capable of rendering the gelatinous "mixture or body insoluble in water. The astringent solution "preferred, is gallic acid, boracic acid, or tannin dissolved in "water." It is said "such enamelled surfaces will be waterproof,

" fireproof, and capable of receiving decorations by the photo-
" graphic or other processes."

[Printed, 4*d*. No Drawings.]

A.D. 1865, November 24.—N° 3015.

TURNER, GEORGE WARDLE.—" Improvements in machinery " or apparatus for making pottery, earthenware, or ceramic " articles." These are, " a more expeditious mode of manu-
" facturing the same," " made of pulverized clay by means of " dies and pressure," as follows:—Constructing " a metal table " made to revolve partially at intervals upon a central vertical " axis by means of mechanism," afterwards described." " Upon " the circumference of this table are formed a series of moulds or " dies, the bottoms of which are capable of being raised up so as " to deliver the article when manufactured. An upright framing " rises up at opposite sides of the table, and carries at top a shaft " receiving rotary motion from a steam engine or any other " source of motive power. This shaft is provided at either side " of the table with a cam or excentric, serving to impart an " up-and-down motion to two stampers working up and down in " guides formed on the upright framing. To the lower ends of " these stampers are fixed the upper parts of the before-mentioned " dies or moulds fixed on the tables, so that these, after being " filled to the required extent with the pulverized clay, pass " round and come underneath the stampers, the upper parts of " the moulds upon these are made to descend into the part of " the moulds on the table, and to exert the requisite pressure " upon the pulverized clay in the latter to form it into the article " required." The intermittent rotary motion to the tube is imparted as follows:—" Upon the end of the cam shaft is fixed " a crank or crank plate, imparting a reciprocating motion by " means of a connecting rod to a pawl acting upon a ratchet " wheel; this ratchet wheel is fixed on a horizontal shaft carried " by the framing, which shaft carries at its other end a bevil " wheel in gear with a second bevil wheel fixed to the revolving " table."

[Printed, 1*s*. 4*d*. Drawings.]

A.D. 1865, November 27.—N° 3042.

LAKE, WILLIAM ROBERT.—(*A communication from William Barney Watkins.*)—" An improved composition for enamel, paint,

" varnish, or plaster." This consists, in reference to this subject, in making and using an "enamel paint for the purpose of " covering iron, steel, or other solid metallic substances, or for " the production of an artificial marble or stone, crockery, " buttons, ornaments, porcelain, enamelling iron vessels, and for " various other similar purposes," applying " a heat to the article " so covered, or coated, or fabricated, not to exceed 300° F." The material is made by taking " about equal quantities by weight of " fine white marble, and an alkaline silicate, the silicate being about " 25 to 30 degrees Beaumé," and mixing them and grinding them together; also using in the above composition "some of the " following earthy or metallic colors for the purpose of giving " color to the composition of matter, terra sienna, red and yellow " ochre, india red, vermillion, ultramarine, oxide of iron, alumina, " red chalk, chromes, ivory and lamp black, &c." In the event of the enamel becoming too thick or too thin, more or less silicate is added or used.

[Printed, 4*d*. No Drawings.]

A.D. 1865, December 8.—N° 3159.

BOULTON, WILLIAM, and WORTHINGTON, JOSEPH.—(*Provisional protection only.*)—"An improved method of and " apparatus for making mortars, bowls, spill pots, jelly cans, " galvanic troughs, and other similar articles." These " articles " are made from pulverized clay or dust," as follows:—Providing " a metal ring or shell of the proper thickness and shape " of the article required to be made, sufficiently deep to admit " of the sliding thereon of the moulds herein-after mentioned, " and which metal ring is secured to the plank or bottom of " the press." Providing " a plunger or ram to slide inside the " before-mentioned ring or shell, and so shaped as to form the " inside of the article to be made." Having "a partially hollow " spindle secured to the plunger or ram, to which is attached a " lever and weight for the purpose of adjusting the ram to the " height required to enable it to distribute the clay inside the " mould in such a manner as to give the clay a proper thickness " for the article required, and cause it to receive an uniform " pressure in all parts. Any other contrivance besides the lever " and weight which will have the same effect will be equally " good." Providing " an outer mould, open at the top, to " receive pulverized clay or dust. The inside of the mould is of

" the same shape as the outside of the article required, and is " made to pass over the ring or shell and is adjusted to the " proper height " to receive sufficient clay to make the article. Providing " a top ram or die made of any convenient shape " attached to or detached from a screw or other means of pressure " which is applied to consolidate the article." Providing " a " second lever (or another suitable contrivance), on the hollow " spindle before mentioned, to extricate the plunger from the " clay; and in order to do this more readily, a small valve is " provided in the plunger to admit air."

[Printed, 4*d*. No Drawings.]

1866.

A.D. 1866, January 15.—N° 129.

HOLDCROFT, WILLIAM, and WOOD, JOSIAH.—(*Provisional protection only.*)—" Improved self-acting jiggers, lathes, and wheels " for potters' use and other purposes." This consists in rendering those tools " self-acting, by connecting them to a train of spur " wheels similar to ordinary clockwork, and driven by weights or " springs or by hydraulic pressure." The power and speed of these tools " are to be controlled by means of a friction wheel " acting in a similar manner to those " in such tools driven by steam. " The weights or springs may be wound up from time to " time by hand or otherwise so as to be always available for use " in driving these tools. And " the hydraulic pressure may be " maintained either by a natural flow of water from a source " above the place where the pressure is utilized, or the water may " be raised into a reservoir or cistern by pumping or other known " mechanical means."

[Printed, 4*d*. No Drawings.]

A.D. 1866, January 31.—N° 308.

GREAVES, GEORGE.—(*Provisional protection only.*)—" Improvements in treating certain chemical matters and compounds " for producing glazed surfaces." These are, making a mixture of lime or carbonate, or both, with water, passing it through any ordinary mill, edge stones, rollers, or other suitable apparatus

that will "grind the substance to an impalpable pulp," placing it in a pug or mixing apparatus and agitating it "in combination "with alum, sulphate of alumina, or any other aluminous sub- "stance that will afford the required proportion of alumina," then passing it through "the grinding apparatus, when it is ready "for use." The proportions generally used are "about 75 per "cent. of water, 20 per cent. of sulphate of lime, and 5 per cent. "of alumina." "Although they may be varied to produce an "inferior article."

[Printed, 4*d*. No Drawings.]

A.D. 1866, February 3.—N° 344.

JOBSON, ROBERT. — "Improvements in moulding articles "of clay, earthenware, or porcelain, and in apparatus used "therein." These are, placing in each of the joints of the mould usually made of metal, "a strip of a soft or compressible material "such as leather, wood, or felt, for example, and thus the joint "is made tight." The use of soft or compressible strips in the joints, "offers great facility for moulding articles in plastic clay, "as it allows of the use of compound plungers," such as are described in No. 2862, A.D. 1860. Also forming "small grooves "in the plunger by which the pressure is applied so that any "surplus clay which may be put into the mould may pass out "through the grooves and escape from the mould, and by turning "the plunger the strips so formed are at once detached from "the moulded article." It is stated that in the moulds now em- "ployed as soon as the mould becomes somewhat warm," the plunger drives the clay through the joints which are "necessarily "made in order that it may deliver the article when it has been "moulded."

[Printed, 8*d*. Drawing.]

A.D. 1866, February 6.—N° 358.

BOULTON, WILLIAM, and WORTHINGTON, JOSEPH.—(*Provisional protection only.*)—"Improvements in apparatus for "manufacturing dishes, plates, and other similar articles from "pulverized clay or dust, or other suitable materials." These are, in apparatus which works as follows:—"The central part of the "inner mould is first raised by means of a lever or treadle acting "upon the central stalk," the pulverized clay or dust is then

filled in to the mould and with a straight "striker" the top is struck off level. The central part of the inner mould is next allowed "to fall or sink till it is level with the other part of the "the same (the central portion of the clay or dust sinking with "it)," and the upper die is brought down "by means of the "screw or other mechanical means of pressure employed."

[Printed, 4*d*. No Drawings.]

A.D. 1866, February 9.—N° 399.

BEVAN, EDWARD, and FLEMING, ABEL.—(*Provisional protion only.*)—"Improvements in the construction of furnaces and "kilns employed in the manufacture of glass, and in the heating "and burning of articles of glass and earthenware." These are, constructing "outside or over the walls, arches, roofs, crowns, or "other outer surfaces of the above-mentioned furnaces or kilns "or outside or over the more exposed portions or parts of them "only, at a distance therefrom, other walls of brick or masonry "or coverings of metal or other material; or several walls or "coverings, the one outside from the other." In the space or spaces between the walls exposed to the air atmospheric air or other gas is admitted, "preferably in a dry condition, and to allow "for expansion and contraction thereof," placing "valves or "regulators in the outer wall or walls, covering or coverings, "weighted or set so as to open outwards or inwards at any "desired pressure." By these arrangements the objects effected are the prevention or loss or waste of heat, to obtain within such furnaces or kilns a more uniform temperature, and to render the operations "less inimical to the health of the workmen."

[Printed, 4*d*. No Drawings.]

A.D. 1866, February 9.—N° 402.

ARMSTRONG, ROBERT WILLIAMS.—"Improvements in pre-"paring clay, dust, and similar materials for making earthen and "other ware, and in machinery for moulding hollow articles in "earth, clay, and other like materials." These are, first, "pre-"paring clay, dust, and similar materials" for the above purposes, "by passing it after it has been brought to the required degree of "dampness through a pair of brushes, either circular or flat, by "the motion of which or of one of them, the particles of clay

" which are the dampest are broken up," and the whole made more uniform.

Second, for moulding hollow articles of the above materials, having " a fixed cylinder, on the bed of which is placed an inner " die or mould in one or more pieces, of the shape required ; this " mould is free to rise and fall inside the cylinder, and has one or " more springs underneath," the play of the spring or springs, and consequently the position of the mould or discs are " regulated " by rods and set pins," the mould depressed to its lowest point is stopped and rests on a bed. Outside the cylinder is another mould in one or more pieces, free to rise and fall and give shape to the outside of the article to be produced, allowing of the escape and admission of air, and " the easy removal of the article when " made." The upper die is made to descend between guides and the cylinder before named. The " pressure is applied by a lever, " screw, hydraulic, or other press, the plunger of which may form " a part or portion of the tools or moulds for producing the " required articles."

[Printed, 10*d*. Drawing.]

A.D. 1866, February 14.—N° 469.

HENRY, Michael.—(*A communication from Chevalier Henry Avet.*)—" Improvements in photography, and in the process of " producing printing surfaces and other like surfaces by the aid " of photographic agency." These are, in reference to this subject, " the figuring of porcelain, biscuit, or other translucent " materials," as follows :—" A statue, portrait, lanscape, or oil or " water picture is first taken, and a relief or raised surface pro- " duced therefrom," as afterwards described, and " the metallic " surface obtained therefrom is used " for figuring as above. To obtain the image or representation it is first produced on a plate of glass or other translucid substance by any known photographic process, collodion is applied on the other side, and a shallow edge or rim of wax is raised or formed round this side of the plate to prevent a solution, made rather thick, of 4 or 5 parts of gelatine or gum to 1 part of bichromate of potash, made in preference with warm water, and placed upon it, from running off. The plate is now exposed on the non-collodionized side to the action of light, and the light passes " through the thickness of the plate to the " collodion film or surface, and to the layer of organic substance " thereon." " The time during which the exposure lasts is

" regulated by experience according to the state of the weather, " the nature of the plate, and the intended result to be obtained." After the plate has been exposed, the next step is to dissolve in the dark chamber " the parts of the film or layer of bichromatized " organic substance, which the black tints and half tints of the " plate have wholly or partially preserved from the action of " light," leaving the subject raised in relief on its surface. If the relief is insufficient, the process is repeated, care being taken to remove from the plate with nitric acid any " anti-photogenic tint " which the plate may have acquired from the bichromate." The subject produced in relief is then metalized by any ordinary means. In place of placing a solution of gelatine as above on the plate of glass, sheets of gelatine are sensitized by bichromate of potash and applied on the plate.

[Printed, 4*d*. No Drawings.]

A.D. 1866, February 22.—N° 547.

LEAK, ELIAS.—(*Provisional protection only.*)—" Improvements " in driving jiggers, lathes, and throwing wheels used by potters." These are, driving these tools " by the direct action of steam on a " fan or wheel enclosed in a box, and fixed on the spindle of the " jigger lathe or throwing wheel to be driven." Upon the spindle is keyed or fixed " a double fan or wheel (somewhat similar to " what is known as a drum paddle wheel), consisting of two " plates or discs outside, and one disc or midfeather in the centre. " The vanes of the fan or wheel divide the cylindrical spaces on " each side of the central disc or midfeather into a number of " compartments." " This fan or wheel is enclosed in a box, " which is provided with two pipes, one for the admission of " steam to act upon the fan or wheel, and the other for emission or " escape of steam therefrom. The former is connected to a steam " boiler, and is furnished with a stop cock. The end which com- " municates with the fan box is divided into two branches, so that " two jets of steam act simultaneously on the fan or wheel, one " on each side of the central disc or midfeather. Upon opening " the stop-cock, the steam acts direct on the fan or wheel fixed on " the spindle," and drives these tools without gearing or endless bands, their speed " is controlled by means of a brake actuated by " a treadle in the usual manner, but it may also be regulated by " opening or closing the stop-cock more or less."

[Printed 4*d*. No Drawings.]

A.D. 1866, March 17.—N° 797.

ASHTON, ROBERT HOWE.—"Improvements in pictures ob-
"tained upon paper, glass, porcelain, or other substances, with
"transparent or semi-transparent materials." These are, in reference to this subject, as follows:—Combining a printing or other mode of treating as a substratum, with a process described in No. 2338, A.D. 1864, which is as follows:—"In obtaining an
"intaglio surface of degrees of concavity varying with the lights
"and shades of a photographic picture, and in obtaining there-
"from a cast or print in gelatine or other transparent substance
"mixed with a pigment. In employing gelatine the coloured pre-
"paration thereof is poured upon the mould, and the paper, glass,
"or other substance intended to support the picture is placed
"thereon, after which the pressure is applied by which the super-
"fluous colouring matter is squeezed out, and when the remain-
"ing portion is set, the paper or other material is lifted together
"with the adhering picture. This picture is thus formed in
"lights and shades by different thicknesses of ink, the thinest
"almost showing the bare paper, and therefore the lightest parts,
"and the thickest the darkest parts, such parts being when wet
"in considerable relief, but subsequently drying down to nearly a
"flat surface." "For instance in the case of a portrait I print
"by means of chromo-lithography or other known methods of
"printing in color, the flesh, dress, and other tints upon paper or
"other material," and then "upon them print the above relievo
"picture." In order "that the several tints may occupy correct
"relative positions, so as to agree with the outline to be printed
"upon them, I furnish the lithographer with a print from the
"mould, and he can then by tracing and transferring the several
"boundaries to his stones or other surfaces produce the combined
"tints in correct relation to the outlines. When the second
"printing is to be effected, means must of course be adopted for
"causing the several parts of the picture to fall correctly on the
"boundaries of the tints." In the case of glass, porcelain, or other hard substances, angle pieces are adapted to hold them when the pressure is applied. As above "the chromotype is taken
"to a press to receive the print in coloured gelatine or other such
"ink; instead of this method, however, the two printings may be
"combined by transferring a print obtained in gelatine to the
"chromotype." If the gelatine print "be on glass or other

" transparent surface, then it may be adjusted to the said chromo-
" type by hand." " I have hitherto supposed that the coloured
" picture is produced by printing, but the same effect may be
" produced by filling in the required tints by hand, and this
" method would of course be adopted when a few copies only
" were required." It is proposed " to use other printing surfaces
" in combination with the above-mentioned description of ink for
" printing upon tints as above described." To illustrate this, suppose that a plate is embossed by ordinary dies so as to produce ornamental scroll work, the said embossing being of different degrees of depth; a print being taken from this in gelatine or other such ink will afford a picture similar in effect to those above described, and may be used in the same manner in combination with a colour printing or tinting as those produced from the moulds obtained by aid of photography, and in this manner ornamental devices for windows may be produced. In place of the embossed surface a drawing may be made in wood or other substance, and by scraping away parts of the surface the desired effect of light and shade may be obtained, and a metal mould for the gelatine printing may be made by pressing with soft metal.

[Printed, 6*d*. Drawing.]

A.D. 1866, May 12.–N° 1365. (* *)

PRICE, ASTLEY PASTON. — (*A communication from Jakob Bührer and Carl Hamel.*) — " Improvements in the means of " effecting the combustion of fuel and in apparatus employed " therein."

They relate to the process described in Specification No. 956, A.D. 1866, and consist in using an exhaust or blowing fan, and a self-acting arrangement for feeding in the finely powdered fuel.

The air blowing or exhausting apparatus is preferably driven by the same prime mover. This system of combustion is applicable to steam boilers, and also to the burning of bricks, lime, cement, pottery, and similar goods, in which latter cases, the materials to be burnt may be so stacked as to themselves form the combustion chamber for the powdered fuel.

The self-acting feeder for supplying the powdered fuel consists of a conical hopper, fitted with a conical plug to the upper end of which is attached an open cage. " A vertical spindle is attached " to the conical plug, and passes through a collar bearing on

" the mouth of the hopper, an adjustable collar on the spindle " serving to regulate the height of the plug, and consequently, " the size of the feed orifice." "A horizontal lever arm is " attached to the upper end of the spindle, and to this arm is " connected a reciprocating rod," worked by the prime mover. A number of such hoppers worked simultaneously in this way are employed. Instead of conical plugs, "rotary cocks, valves, " or regulators, or reciprocating slides " may be also adapted to the hopper, but in all cases the fuel is fed in in concert with the apparatus for supplying the air for supporting combustion. This air is preferably heated by means of the waste heat of the combustion chamber or the furnace or flues.

A pottery kiln is shewn with a long deep combustion chamber, into which the powdered fuel is fed from a self-acting hopper, and which is supplied with heated air through perforations in a flue lying parallel to it.

In brick, lime, or cement kilns, the materials being so stocked as to leave interstices for the descent of the powdered fuel, a number of feeding hoppers are disposed along the top of the kiln. The plugs on either side are simultaneously acted upon by one long rod connected to a number of levers by means of pins.

[Printed, 8*d*. Drawing.]

A.D. 1866, May 19.—N° 1424.

BROWN, JAMES BRYCE.—(*Provisional protection only.*)—" Im- " provements in mowing machines." These are, making the drums of such machines, which are now commonly made of cast iron, " of porcelain, earthenware, or similar plastic material, such " drums are lighter and cheaper and run with less friction." Also where the drums are made of cast iron coating them with vitreous enamel. The rollers of such machines which are commonly made of wood or iron, are made of porcelain, earthenware, or similar plastic material. Also where the rollers are made of iron coating them with a vitreous enamel. Likewise making the handles of mowing machines of porcelain or earthenware.

[Printed, 4*d*. No Drawings.]

A.D. 1866, June 26.—N° 1698.

COTTERILL, CHARLES FORSTER.—(*Provisional protection only.*) —" Improvements in the manufacture of earthenware and other

" pipes, and in machinery or apparatus to be employed in the " said manufacture." These are, first, making pipes in segmental pieces which are much thinner than usual, and filling in the space between the inner and outer pipes with cement " composed of six parts by weight of pitch, one of gas tar, one of " plaster of Paris, and ten of sand;" the junctions of the outer segments are not opposite the junctions of the inner segments. In the upper part of the outer segment are holes, through which the space is filled with the cement. The cement is prevented from running out from between the pipes by means of rings at the bottom. Three or more concentric pipes with cement between them may also be employed. In preference, the segments are dipped " after they are taken from the kiln in which they are " burned, and while they are still hot, in a composition made of " six parts by weight of pitch, two parts by weight of gas tar, one " part by weight of plaster of Paris, and three parts by weight of " sand, the said composition being melted." For closing the bottoms of each inner segment, ribs are made on each segment or " detached rings may be placed on the inner pipe to support " the outer segments, and prevent the running out of the " cement."

Second, " a portable furnace and pan for melting the compo- " sition in which the segments of pipes are dipped as they are " taken from the kiln." The furnace is mounted on wheels, and the pan is divided longitudinally into two compartments, in order that the dipping may be conducted in one compartment, while in the other, composition is being melted.

[Printed, 4*d*. No Drawings.]

A.D. 1866, July 2.—N° 1752. (* *)

BONNEVILLE, Henri Adrien.—(*A communication from Alexandre Martin and Albert Béranger.*)—(*Provisional protection only.*)—" Improvements in the construction of furnaces and " kilns."

These relate to " furnaces for the melting of ores, and of kilns " for the baking of porcelain, pottery, lime, and for drying peat, " washed kaolin," &c., and " consist in doing away with the " ventilators now used and replacing them with an aspirating " contrivance adapted to their upper part, which are provided " with only one requisite opening to allow the said operation to " take place."

Their lower parts are provided with openings "proportional to "the force of the aspiration."

[Printed, 4*d*. No Drawings.]

A.D. 1866, July 7.—N° 1794. (* *)

KUNTSMANN, ROBERT.—(*Provisional protection only.*)—"Im- "provements in burning and drying bricks, pottery, earthen- "ware, clay, lime, and cement, and in the apparatus employed "therein." These relate to constructing kilns for burning in a continuous manner bricks, pottery, earthenware, clay, lime, cements, &c., and also to drying bricks previous to their being burnt.

The kiln consists of chambers communicating with each other and with a chimney by flues having dampers for determining the communications. Each chamber is heated by fire-places situated in the sides.

The grate is composed of parallel bars arranged in the form of steps, forming a stepped fuel surface. The exterior of each grate is closed by hinged doors, one of which is opened when supplying fuel, and the others for clearing the bars. In the bottom of each chamber are perforations communicating with a flue beneath, which communicates with the adjoining chamber. It has also a branch leading from it to the fire-places, either of which communications may be opened or closed by dampers. Openings in the roof communicate with flues which lead direct to the chimney. When a number of chambers are employed they are constructed in two parallel rows, with a tramway between them, and preferably with the doors of each row opposite each other; or the fire-places in each row may be opposite each other, and the kiln doors on the outer sides. In using these kilns the hot air is taken from that chamber in which the bricks are cooling. It is caused to pass by the bottom flue through the fire-places of the adjoining chamber. From the chamber in which the bricks are burnt the air passes downwards through the bottom into the flue beneath, and is conveyed into the next adjoining chamber through the openings in the floor. These last chambers communicate with the chimney by the openings in the roof and the flues above them. "By the time the bricks in the first-mentioned chamber have "been sufficiently cooled to be removed, the bricks in the next "one are burnt, and the first chamber may be refilled whilst

" the hot air from the second passes through the fire-grate of the " third kiln or chamber, and so on throughout the series, the " process being continuous."

[Printed, 4*d*. No Drawings.]

A.D. 1866, August 29.—N° 2230.

DAVIS, JAMES.—" An improved method of treating limestone " and applying the products for purifying and rendering water " palatable, and for imparting a briskness to other beverages, as " also for utilizing the substances to the various purposes of " the builder." This consists, in reference to this subject, as follows :—Placing in an air-tight chamber half filled with water caustic lime, about half a bushel to a hogshead of the water, " together with or without the caustic alkalies, soda, or potash, or " one of them varying in quantity from one to six ounces of either " kind, as also with or without one or more of the siliceous, " aluminous, or ferruginous substances, calcined or not," in which is placed " bricks, tiles, pipes, earthen vessels, or porous " substances of any kinds," and having made the doorway perfectly air-tight then connect the chamber to the neck of a retort, " both being provided with a safety valve to prevent " explosion." In this retort are " limestones, magnesian, or " otherwise, together with or without the carbonates of soda " or potash or one of them " which substances are reduced " to " the caustic state by calcining." The contents of the tank (the earthy matters) are thus subjected to the dissolving power of the carbonic oxide (carbonic acid ?) gas or gases, and enter and saturate the above materials. On opening the door of the chamber and removing the above materials they are found to be " capable of receiving a very high polish and also of resisting the " destructive elements fire and water."

[Printed, 4*d*. No Drawings.]

A.D. 1866, September 20.—N° 2416.

WALKER, ANDREW BARCLAY.—" Improvements in brewing, " malting, distilling, and apparatus employed therein, parts of " which are applicable for drying grain or other goods." These are, in reference to this subject, as follows :—What is called an " attemperator " is made; this is a vessel of tinned copper or

other suitable material "round, square, or oblong in form;" inside of this vessel is fixed a tube or series of tubes passing from end to end, through this vessel hot water or steam is made to flow and the air from the "attemperator" is conducted to and discharged into rooms in which are "any description of goods for "potteries."

[Printed, 2*s.* 6*d.* Drawings.]

A.D. 1866, November 27.—N° 3120.

ATTERBURY, JOHN HENRY, and WOOLF, SYDNEY.—"Im- "proved means and machinery for the manufacture of earthen- "ware and other articles made from plastic materials." This consists, first, "to facilitate the production" of the above articles, to one end of a suitable foundation plate or table is secured "a "pugging mill in a vertical position, its pugging shaft actuated "by suitable gearing from the main driving shaft; this latter is "supported by brackets at the upper end of the mill and runs "horizontally over the same." A bracket is projected from the side of the pugging mill in which is a vertical spindle free to move in a vertical direction. A lever of the first order having its fulcrum from the carrying bracket is on the upper end of this spindle. "Between the end of the lever and its fulcrum" is "a "loose grooved pulley, which is impinged upon by an excentric "keyed upon the driving shaft immediately over it;" this depresses the vertical spindle and causes "an adjustable die affixed to its lower end to descend and impress the clay, &c. placed underneath the die. The pressure of the excentric "upon the pulley placed "upon the lever being removed, balance weights on the shorter "arm or arms restore the vertical spindle to its previous position." A roller covered with flannel and placed in proximity to the die, receiving a horizontal motion by means of levers and excentric from the main shaft is now brought into play and passed over the face of the die to remove impurities. In front of the die spindle is a shaft geared from the main shaft, "having on its lower "extremity an arm so arranged as to strike the mould away "when the die ascends, a 'losing' or vertical motion being "simultaneously applied to the bottom of the mould."

Second, heating the metal die a number of jets of gas may be used.

Third, arrangements "for feeding and traversing the moulds from "the pugging mill to the die," effected by a species of turntable

" having its centre equidistant from the pugging mill and the " die. This turntable is adapted to receive four moulds (by pre- " ference) one at each quarter of its periphery and is actuated by " suitable lever and ratchet apparatus underneath the foundation " plate or table, being so arranged that it revolves one-fourth of " a circle at each stroke, so that whilst the material for operation " is being discharged from the pugging mill to the mould under " it another is under the die receiving the impress, one inter- " mediate waiting for impress and one waiting for a fresh mould " A wire knife actuated by bell crank and levers from the main " shaft passes reciprocally under the pugging mill and cuts off " the required amount of clay or other plastic material, which is " forced through the dies (round or other required shape) secured " to the bottom of the pugging mill. The above machinery may " be actuated by hand or other motive power than steam if " desired." Modifications of the above are described.

[Printed, 10*d*. Drawing.]

APPENDIX.

A.D. 1855, February 15.—N° 346.

DELABARRE, CHRISTOPHE FRANCOIS.—"Improved appara-" tus to be used in propelling gases and forcing liquids." These are, "the use and employment of a mixture of steam and air or " other gases," "for causing draught in or blowing furnaces " either by attraction, suction, or chimney-blast, or else by direct " blowing, driving, or propulsion," "for heating and warming " houses, water, steam cylinders, &c;" "for exhausting or ex-" tracting vapours from closed vessels and deleterious gases from " places in a low situation and also for forcing wholesome air " into the same" "by projecting a relatively small and more or " less compressed current of steam or other attracting fluid into " a large single or multiple pipe or channel so at to give access to " and cause the attraction of a considerable mass of air to be " carried along with the steam, &c." When the above is applied " to the manufacture of pottery, glass, bricks, &c." The air which escapes from furnaces employed in such manufactures being of a very high temperature it is necessary to absorb from it the excess of temperature and for this purpose "the attracting appara-" tus is not adapted immediately to the sides of the furnace, but " follows a single channel or set of pipes immersed in a long " trough which is constantly traversed by a current of water, or " they may be made to pass through a boiler, and thus generate " steam that may be used for artificial draught."

[Printed, 1*s.* 2*d.* Drawing.]

A.D. 1858, November 24.—N° 2667. (* *)

HESS, RICHARD HENRY.—Manufacturing numerous different articles, among which vases are mentioned from certain silicates of magnesia, "such as talc, steatite, &c." These substances are reduced to a state of powder, and then pressed into suitable moulds, colouring matter being added when required. "Other " substances may also be added to the silicates, such as kaolin, " alumina, lime, carbonate of barytes and felspar, at the option of

" the manufacturer." After being formed in the mould, the article is removed therefrom, and baked or fired. The addition of a small proportion of glass to the material before pressing it into the mould, " assists the fusing operation."

[Printed, 4*d*. No Drawings.]

A.D. 1859, November 25.—N° 2668.

CARR, THOMAS.—" Improvements in arrangements and me-
" chanism for drying glue, moulded clay, sugar, white lead, and
" various other substances and articles of manufacture." These are, first, combining " a fan or series of fans " with " a chamber
" or chambers for drying purposes." The articles to be dried are placed at intervals in a long square chamber open at each end; at one end is a horizontal axle or fan " very similar in form and
" construction to the sails or vanes of an ordinary windmill." The fan is " rotated by any convenient motive power." " When
" the chamber is a long one and the obstructions to the air con-
" siderable," " another or more similar fans " " may be mounted
" at regular distances down the chamber on the same axis as that
" of the first, lengthened for the purpose."

Second, " drying articles or substances in chambers by causing
" the major part of a current of air artificially heated and set in
" motion to keep continuously circulating through the said
" chambers;" this is done " by the addition of one or more cham-
" bers placed alongside the former, and communicating with it at
" both ends;" and causing " the currents of air generated by
" any mechanical means (preferring however, the fan herein-
" before described) to pass up one chamber and return down the
" other in constant circulation until the temperature is raised by
" its frequently passing over any suitable heating apparatus
" placed within the chambers," and until the air is saturated with moisture absorbed from the materials. Furthermore, regulating the temperature and changing the air by means of apertures or holes in the top or sides of one or more of the chambers in which there are dampers or valves, similar dampers or valves being placed in the flues or pipes of the heating apparatus.

[Printed, 8*d*. Drawing.]

INDEX OF SUBJECT MATTER.

[The numbers refer to the pages in which the Abridgments commence. The names printed in *Italic* are those of the persons by whom the inventions have been communicated to the Applicants for Letters Patent.]

Acetic acid, use of:
Brooman (*De Lavenant*), 32.

Air, superheating:
Nelson, 18.

Albumen, use of:
Brooman (*Dupuy*), 11.
Woodbury, 48.
Hett, 57.
Newton (*Gibson*), 60.

Alcohol, use of:
Cimeg, 13.

Alkalies and their salts, use of:
Brooman (*Maréchal and Tessié du Motay*), 5.
Brooman (*Dupuy*), 11.
Cimeg, 13.
Ellis, 15.
Nelson, 18.
Brooman (*De Lavenant*), 32.
Prince (*Duprat*), 38.
Johnson (*Grosjean*), 45.
Woodbury, 48.
Martius (*Obernetter*), 50.
Scarratt and Dean, 54.
Smith, 56.
Hett, 57.
Lake (*Watkins*), 61.
Henry (*Avet*), 66.
Davis, 73.

Alumina and its salts, use of:
Brooman (*Maréchal and Tessié du Motay*), 5.
Ellis, 15.
Johnson (*Grosjean*), 45.
Newton (*Gibson*), 60.
Lake (*Watkins*), 61.
Greaves, 63.
Davis, 73.

Arsenic and its salts, use of:
Brooman (*De Lavenant*), 32.
Hett, 57.

Asbestos, use of:
Boetius, 14.

Alkaline earths and their salts, use of:
Brooman (*Maréchal and Tessié du Motay*), 5.
Boetius, 14.
Ellis, 15.
Brooman (*Tessié du Motay and Maréchal*), 24.
Hawthorn, 25.
Forrester, 30.
Hughes, 31.
Brooman (*De Lavenant*), 32.
Prince (*Duprat*), 38.
Johnson (*Grosjean*), 45.
Lake (*Watkins*), 61.
Greaves, 63.
Cotteril, 70.
Davis, 73.
Hess, 76.

Balata, use of:
Smith, 56.

Balls, making:
Macintyre, 27.

Bearings, making:
McAdam and Chrystal, 4.

Benzine, naphtha, &c., use of:
Brooman (*Dupuy*), 11.
Hughes, 16.
Brooman (*Tessié du Motay and Maréchal*), 24.
Smith, 56.

Benzole. *See* Benzine.

Biscuit-ware. *See* Porcelain, &c.

Bitumen. *See* Tarry matters, use of.

Blocks, making:
Parkinson, 29.

Blood, use of:
Hett, 57.

Bobbins, making:
McKenzie, Murray, and Hamilton, 5.

Bolts, making:
Le Souëf (*Schuberth*), 8.

Bone, use of:
Clark (*Hautecloque*), 9.

Boracic acid and its compounds, use of:
Brooman (*Maréchal and Tessié du Motay*), 5.
Ellis, 15.
Nelson, 18.
Brooman (*De Lavenant*), 32.
Johnson (*Grosjean*), 45.
Newton (*Gibson*), 60.

Bottles, making:
Murray, 12.
Miller and Struthers, 22.

Bowls, making:
Boulton and Worthington, 62.

Breeze, use of:
Burg, 52.

Bricks, making, &c.:
Lindeman, 18.
Ranson, 19.
Malpas, 23.
Forrester, 30.
Brooman (*De Lavenant*), 32.
Newton (*Hoffmann*), 40.
Gisborne, 41.
Chamberlain, Craven, and Wedekind (*Hoffmann*), 43.
Brown, 50.
Price (*Bührer and Hamel*), 69.
Kuntsmann, 72.
Davis, 73.

Bromine, use of:
Smith, 56.

Bronze powder, use of:
Woodbury, 48.

Buttons, making:
Clark (*Hautecloque*), 9.
Clark (*Feldtrappe and Dutjoy*), 25.
Lake (*Watkins*), 61.

Bushes, making:
McAdam and Chrystal, 4.

Canvas, preparing:
Smith, 56.

Caoutchouc. *See* India-rubber.

Caps, use of:
Gedge (*Gros*), 59.

Castors, making:
McAdam and Chrystal, 4.

Cements, making, using, &c.:
Wilkinson, 1.
Le Souëf (*Schuberth*), 8.
Ellis, 15.
Hawthorn, 25.
Prince (*Duprat*), 38.
Chamberlain, Craven, and Wedekind (*Hoffmann*), 43.
Price (*Bührer and Hamel*), 69.
Cotterill, 70.
Kuntsmann, 72.

Ceramic-ware. *See* Porcelain.

Charcoal, use of:
Burq, 52.

China. *See* Porcelain.

Chromolithography. *See* Paints, painting, &c.

Chromium, its acids and salts, use of:
Brooman (*Dupuy*), 11.
Ellis, 15.
Woodbury, 48.
Martius (*Obernetter*), 50.
Lake (*Watkins*), 61.
Henry (*Avet*), 66.

Citric acid and citrates, use of:
Brooman (*Dupuy*), 11.
Smith, 56.

Clay, &c., preparing:
Robotham and Hackney, 2.
Boetius, 14.
Robotham and Oswald, 17.
Nelson, 18.
Ranson, 19.
J. and M. Craig, 21.
Scrivener, 39.
Newton (*Hoffmann*), 40.
Worssam, 41.
Burq, 52.
Wright, 54.
Hett, 57.
Greaves, 63.
Armstrong, 65.
Bonneville (*Martin and Berenger*), 71.

Clay, &c., preparing—*cont.*
Kuntsmann, 72.
Atterbury and Woolf, 74.
Hess, 76.

Cloth, preparing:
Newton (*Gibson*), 60.

Coal, use of:
Brooman (*Tessié du Motay and Maréchal*), 24.
Burq, 52.

Cock spurs. *See* Drying, &c.

Coke:
Burq, 52.

Collars, ornamenting:
Markland, 8.

Collodion, using:
Brooman (*Dupuy*), 11.
Clark (*Kuhlmann*), 46.
Martius (*Obernetter*), 50.
Henry (*Avet*), 66.

Corks, making:
Miller and Struthers, 22.

Crucibles, making:
Boetius, 14.

Cyanides, use of:
Brooman (*Dupuy*), 11.
Brooman (*De Lavenant*), 32.
Smith, 56.

Dextrine. *See* Gum.

Diaphragms, porous, making, &c.:
Burq, 52.

Drying, baking, burning, &c., ovens and kilns, &c. for:
Joseph, 3.
Henry (*Société Coignet Pere et Fils et Compagnie*), 6.
Birkbeck (*Deshurand and Lemercier*), 9.
Platt and Richardson, 14.
Buller and Mugford, 20.
Malpas, 23.
Johnson (*Hébert*), 26.
Warren, 29.
Forrester, 30.
Ford, F. and L., 33.
Wilson, 34.
Leak, 35.
Campbell, 36.
Woolf, 36.
Edwards, 39.
Scrivener, 39.

Drying ovens, &c.—*cont.*
Newton (*Hoffmann*), 40.
Worssam, 41.
Gisborne, 41.
Chamberlain, Craven, and Wedekind (*Hoffmann*), 43.
Clark (*Kuhlmann*), 46.
Martius (*Obernetter*), 50.
Burq, 52.
Meakin, 53.
Emery, 53.
Wright, 54.
Grainger and Girdler, 55, 56.
Hett, 57.
Brooman (*Durand*), 58.
Armstrong, 59.
Bevan and Fleming, 65.
Price (*Bührer and Hamel*), 69.
Bonneville (*Martin and Beranger*), 71.
Kuntsmann, 72.
Davis, 73.
Walker, 73.
Delabarre, 76.
Hess, 76.
Carr, 77.

Earthenware, stoneware, &c.; goods of, making, &c.:
McAdam and Chrystal, 4.
Cliff, 4.
Birkbeck (*Le Bourq*), 7.
Le Souëf (*Schuberth*), 8.
Birkbeck (*Deshurand and Lenurcier*), 9.
Yapp (*Mangin*), 10.
Brooman (*Dupuy*), 11.
Murray, 12.
Maw, 14.
Hughes, 16.
Lindeman, 18.
Ranson, 19.
Miller and Struthers, 22.
Malpas, 23.
Brooman (*Tessié du Motay and Maréchal*), 24.
Hawthorn, 25.
Macintyre, 27.
Parkinson, 29.
Warren, 29.
Forrester, 30.
Hughes, 31.
Brooman (*De Lavenant*), 32.
Ford, F. and L., 33.
Kramer, 34.
Leak, 35.
Campbell, 36.
Cliff, 37.
Woolf, 37.
Prince, 38.
Edwards, 39.
Scrivener, 39.
Gisborne, 41.
Boulenger, 42.
Cochran, 42.
Chamberlain, Craven, and Wedekind (*Hoffmann*), 43.

Earthenware, &c.—*cont.*
Clauss, 49.
Boote, T. L. and R., 49.
Emery, 53.
Grainger and Girdler, 55.
Smith, 56.
Grainger and Girdler, 56.
Hett, 57.
Brooman (*Durand*), 58.
Gedge (*Gros*), 59.
Armstrong, 59.
Newton (*Gibson*), 60.
Turner, 61.
Lake (*Watkins*), 61.
Bevan and Fleming, 65.
Armstrong, 65.
Leak, 65.
Price (Bührer and Hamel), 69.
Brown, 70.
Cotterill, 70.
Bonneville (*Martin and Béranger*), 71.
Kuntsmann, 72.
Davis, 73.
Walker, 73.
Atterbury and Woolf, 74.
Delabarre, 76.

Electricity, application of:
Robotham and Hackney, 2.
Robotham and Oswald, 17.
Johnson (*Dodé*), 47.
Woodbury, 48.
Hett, 57.

Electrotyping. *See* Electricity.

Enamelling. *See* Glaze, glazing.

Engraving. *See* Paints, painting.

Essences, turpentine, &c., use of:
Brooman (*Maréchal and Tessié du Motay*), 5.
Brooman (*Tessié du Motay and Maréchal*), 24.
Brooman (*De Lavenant*), 32.
Ford, F. and L., 33.
Kramer, 34.
Johnson (*Dodé*), 47.
Clauss, 49.

Eyes, making:
Le Souëf (*Schuberth*), 8.

Facings, ornamenting:
Markland, 8.

Fats. *See* Oils.

Filtering apparatus:
Burq, 52.

Fire-clay. *See* Clay.

Fire-proof, making:
Boetius, 14.
Newton (*Gibson*), 60.
Davis, 73.

Fluorine and its compounds, use of:
Hughes, 16.
Brooman (*Tessié du Motay and Maréchal*), 24.
Hughes, 31.
Johnson (*Grosjean*), 45.
Clark (*Kuhlmann*), 46.

Fruits:
Cimeg, 13.

Gallic acid. *See* Tannin.

Galvanic battery. *See* Electricity.

Galvanic troughs:
Boulton and Worthington, 62.

Gelatine, size, glue, &c., use of:
Brooman (*Dupuy*), 11.
Kramer, 34.
Woodbury, 48.
Scarratt and Deane, 54.
Smith, 56.
Newton (*Gibson*), 60.
Henry (*Avet*), 66.
Ashton, 68.
Carr, 77.

Glass, making, ornamenting, using, &c.:
Wilkinson, 1.
McAdam and Chrystal, 4.
Brooman (*Maréchal and Tessié du Motay*), 5.
Yapp (*Mangin*), 10.
Brooman (*Dupuy*), 11.
Cimeg, 13.
Maw, 14.
Hughes, 16.
Miller and Struthers, 22.
Brooman (*Tessié du Motay and Maréchal*), 24.
Warren, 29.
Brooman (*De Lavenant*), 32.
Wilson, 34.
Prince (*Duprat*), 38.
Johnson (*Grosjean*), 45.
Clark (*Kuhlmann*), 46.
Johnson (*Dodé*), 47.
Woodbury, 48.
Martius (*Obernetter*), 50.
Baugh, 51.
Smith, 56.
Newton (*Gibson*), 60.
Bevan and Fleming, 65.
Henry (*Avet*), 66.
Ashton, 68.
Hess, 76.

Glaze, glazing, enamelling, &c.:
Wilkinson, 1.
Robotham and Hackney, 2.
Cliff, 4.
Brooman (*Maréchal and Tessié du Motay*), 5.
Birkbeck (*Le Bourq*), 7.
Brooman (*Depuis*), 11.
Maw, 14.
Ellis, 15.
Hughes, 16.
Robotham and Oswald, 17.
Tildesley and Sharpe, 20.
Parkinson, 29.
Forrester 30.
Brooman (*De Lavenant*), 32.
Ford, F. and L., 33.
Edwards, 39.
Johnson (*Grosjean*), 45.
Clark (*Kuhlmann*), 46.
Johnson (*Dodé*), 47.
Woodbury, 48.
Martius (*Obernetter*), 50.
Baugh, 51.
Emery, 53.
Grainger and Girdler, 55, 56.
Hett, 57.
Newton (*Gibson*), 60.
Lake (*Watkins*), 61.
Greaves, 63.
Davis, 73.

Glue. *See* Gelatine.

Gluten, use of:
Nelson, 18.
Newton (*Gibson*), 60.

Glycerine, use of:
Brooman (*Dupuy*), 11.
Martius (*Obernetter*), 50.

Gold and its salts, using, &c.:
Wilkinson, 1.
Brooman (*Dupuy*), 11.
Maw, 14.
Hughes, 16, 31.
Johnson (*Dodé*), 47.
Smith, 56.

Grain of wood impression:
Scarratt and Dean, 54.

Graves. *See* Tombstones.

Gum, dixtrine, &c., use of:
Brooman (*Maréchal and Tessié du Motay*), 5.
Brooman (*Dupuy*), 11.
Ford, F. and L., 33.
Martius (*Obernetter*), 50.
Henry (*Avet*), 66.

Gutta percha, use of:
McAdam and Chrystal, 4.
Miller and Struthers, 22.

Gutta percha, use of—*cont.*
Brooman (*Tessié du Motay and Maréchal*), 24.
Woodbury, 48.
Newton (*Gibson*), 60.
Smith 56.

Handles for doors, &c., making:
Hawthorn, 25.
Macintyre, 27.

Hat-pins, making:
Macintyre, 27.

Hats, ornamenting:
Markland, 8.

Holders, making:
McKenzie, Murray, and Hamilton, 5.

Honey, use of:
Smith, 56.

India-rubber, use of:
McAdam and Chrystal, 4.
Clark (*Hautecloque*), 9.
Brooman (*Tessié du Motay and Maréchal*), 24.
Durand, 28.
Woodbury, 48.
Smith, 56.
Gedge (*Gros*), 59.
Newton (*Gibson*), 60.

Inks, making and using:
Brooman (*Maréchal and Tessié du Motay*), 5.
Brooman (*Tessié du Motay and Maréchal*), 24.
Ashton, 68.

Iodine, use of:
Brooman (*Dupuy*), 11.
Smith, 56.

Iron, removing, from clay. *See* Electricity.

Intaglio surface, making:
Ashton, 68.

Jars, making:
Miller and Struthers, 22.

Jelly cans, making:
Boulton and Worthington, 62.

Journals, making:
McAdam and Chrystal, 4.

Keys, making:
Le Souëf (*Schuberth*), 8.

Kilns. *See* Drying, &c.

Knobs for drawers, &c., making:
Tildesley and Sharpe, 20.
Hawthorne, 25.
Macintyre, 27.

Lactates, use of:
Brooman (*Dupuy*), 11.

Leather, preparing:
Newton (*Gibson*), 60.

Lids:
Miller and Struthers, 22.

Magnets, use of. *See* Electricity.

Marble, imitating:
Clark (*Feldtrappe and Dufoy*), 25.
Ford, F. and L., 33.
Lake (*Watkins*), 61.

Metallic oxides and their salts, use of:
Wilkinson, 1.
Brooman (*Maréchal and Tessié du Motay*), 5.
Brooman (*Dupuy*), 11.
Boetius, 14.
Ellis, 15.
Forrester, 30.
Brooman (*De Lavenant*), 32.
Prince (*Duprat*), 38.
Johnson (*Grosjean*), 45.
Johnson (*Dodé*), 47.
Woodbury, 48.
Smith, 56.
Newton (*Gibson*), 60.
Lake (*Watkins*), 61.
Davis, 73.
Carr, 77.

Metals, coating, decorating, enamelling, protecting, &c. *See* Glaze, glazing, &c.

Millstones, dressing:
Brooman (*Tessié du Motay and Maréchal*), 24.

Monuments. *See* Tombstones.

Mordants, using:
Cimeg, 13.

Mosaics, making:
Birkbeck (*Le Bourg*), 7.
Maw, 14.

Mortars:
Boulton and Worthington, 62.

Moulding in various ways:
McAdam and Chrystal, 4.
McKenzie, Murray, and Hamilton, 5.
Clark (*Hautecloque*), 9.
Maw, 14.
Lindeman, 18.
Buller and Mugford, 20.
Tildesley and Sharpe, 20.
Craig, J. and M., 21.
Macintyre, 27.
Durand, 28.
Parkinson, 29.
Hughes, 31.
Campbell, 36.
Cliff, 37.
Prince (*Duprat*), 38.
Boulenger, 42.
Cochran, 42.
Boote, T. L. and R., 49.
Brown, 50.
Gedge (*Gros*), 59.
Armstrong, 59.
Turner, 61.
Boulton and Worthington, 62.
Holdcroft and Wood, 63.
Jobson, 64.
Boulton and Worthington, 64.
Armstrong, 65.
Leak, 67.
Atterbury and Woolf, 74.
Hess, 76.

Mowing machines:
Brown, 70.

Nails, making:
Le Souëf (*Schuberth*), 8.

Naphtha. *See* Benzine.

Oils, soaps, &c., use of, &c.:
Wilkinson, 1.
Brooman (*Maréchal and Tessié du Motay*), 5.
Brooman (*Tessié du Motay and Maréchal*), 24.
Brooman (*De Lavenant*), 32.
Kramer, 34.
Clauss, 49.
Martius (*Obernetter*), 50.
Scarratt and Dean, 54.

Ovens and Kilns, &c. *See* Drying, baking, burning.

Paints, painting, engraving, printing, &c.:
Brooman (*Maréchal and Tessié du Motay*), 5.
Birkbeck (*Le Bourg*), 7.
Yapp (*Mangin*), 10.
Brooman (*Dupuy*), 11.
Ellis, 15.
Hughes, 16.

Paints, painting, &c.—*cont.*
Brooman (*Tessié du Motay and Maréchal*), 24.
Parkinson, 29.
Forrester, 30.
Hughes, 31.
Brooman (*De Lavenant*), 32.
Ford, F. and L., 33.
Kramer, 34.
Johnson (*Grosjean*), 45.
Clark (*Kuhlmann*), 46.
Johnson (*Dodé*), 47.
Clauss, 49.
Martius (*Obernetter*), 50.
Emery, 53.
Scarratt and Dean, 54.
Grainger and Girdler, 55.
Smith, 56.
Grainger and Girdler, 56.
Hett, 57.
Newton (*Gibson*), 60.
Ashton, 68.

Paper and paper pulp, preparing and using:
Brooman (*Dupuy*), 11.
Ellis, 15.
Kramer, 34.
Clark (*Kuhlmann*), 46.
Hett, 57.
Newton (*Gibson*), 60.
Ashton, 68.

Papier mache:
Newton (*Gibson*), 60.

Pavement, artificial:
Prince (*Duprat*), 38.

Peat, use of:
Burq, 52.
Bonneville (*Martin and Béranger*), 71.

Phosphates, use of:
Brooman (*Maréchal and Tessié du Motay*), 5.
Ellis, 15.
Brooman (*De Lavenant*), 32.
Johnson (*Grosjean*), 45.

Photography, applying:
Brooman (*Dupuy*), 11.
Clark (*Kuhlmann*), 46.
Woodbury, 48.
Martius (*Obernetter*), 50.
Grainger and Girdler, 55.
Smith, 56.
Grainger and Girdler, 56.
Newton (*Gibson*), 60.
Henry (*Avet*), 66.
Ashton, 68.

Pins, making:
Le Souëf (*Schuberth*), 8.

Pipes, making:
Forrester, 30.
Brown, 50.
Cotterill, 70.
Davis, 73

Pitch. *See* Tarry matters.

Plates, making:
Parkinson, 29.

Platinum, use of:
Johnson (*Dodé*), 47.

Plumbago, use of:
Boetius, 14.
Nelson, 18.
Woodbury, 48.

Porcelain, ceramic, china-ware, biscuit-ware, &c., making, ornamenting, using, &c.:
Wilkinson, 1.
McAdam and Chrystal, 4.
Cliff, 4.
Brooman (*Maréchal and Tessié du Motay*), 5.
Le Souëf (*Schuberth*), 8.
Birkbeck (*Deshurand and Lemercier*), 9.
Clark (*Hautecloque*), 9.
Yapp (*Mangin*), 10.
Brooman (*Dupuy*), 11.
Cimeg, 13.
Maw, 14.
Ellis, 15.
Hughes, 16.
Nelson, 18.
Miller and Struthers, 22.
Malpas, 23.
Brooman (*Tessié du Motay and Maréchal*), 24.
Hawthorne, 25.
Clark (*Feldtrappe and Dutfoy*), 25.
Macintyre, 27.
Durand, 28.
Warren, 29.
Forrester, 30.
Hughes, 31.
Brooman (*De Lavenant*), 32.
Kramer, 34.
Wilson, 34.
Leak, 35.
Campbell, 36.
Woolf, 37.
Prince (*Duprat*), 38.
Edwards, 39.
Scrivener, 39.
Gisborne, 41.
Clark (*Kuhlmann*), 46.
Woodbury, 48.
Clauss, 49.
Martius (*Obernetter*), 50.
Baugh, 51.

Porcelain, &c.—*cont.*
Emery, 53.
Wright, 54.
Grainger and Girdler, 55
Smith, 56.
Grainger and Girdler, 56.
Hett, 56.
Brooman (*Durand*), 58.
Lake (*Watkins*), 61.
Greaves, 63.
Jobson, 64.
Henry (*Avet*), 66.
Ashton, 68.
Brown, 70.
Bonneville (*Martin and Bérangér*), 71.
Atterbury and Woolf, 74.

Potters' wheels or lathes. *See* Moulding.

Pulleys, making:
McAdam and Chrystal, 4.

Quarries:
Forrester, 30.

Red clay ware. *See* Earthenware.

Resins, use of. *See* Tarry matters, use of:

Rivets, making:
Le Souëf (*Schuberth*), 8.

Rubbing surfaces:
McAdam and Chrystal, 4.

Saddle pin. *See* Drying.

Saddles. *See* Drying.

Saggars or Seggars. *See* Drying, &c.

Screws, making:
Le Souëf (*Schuberth*), 8.

Sheaves, making:
McAdam and Chrystal, 4.

Silk, coating, &c.:
Smith, 56.

Silica or silicates, use of:
Brooman (*Maréchal and Tessié du Motay*), 5.
Ellis, 15.
Prince (*Duprat*), 38.
Johnson (*Grosjean*), 45.
Lake (*Watkins*), 61.
Davis, 73.
Hess, 76.

Silver and its salts, using, &c.:
Wilkinson, 1.
Brooman (*Dupuy*), 11.
Cimeg, 13.
Maw, 14.
Brooman (*De Lavenant*), 32.
Smith, 56.

Size. *See* Gelatine.

Slabs, making, &c.:
Lindeman, 18.
Parkinson, 29.

Slate, coating:
Brooman (*De Lavenant*), 32.

Slip. *See* Clay, &c., preparing.

Smoke consuming apparatus:
Birkbeck (*Deshurand and Lemercier*), 9.

Soap. *See* Oils.

Spurs. *See* Drying, &c.

Starch, use of:
Brooman (*Dupuy*), 11.
Kramer, 34.

Steam, superheating:
Nelson, 18.

Stencilling. *See* Painting.

Stilts. *See* Drying.

Stone, substitutes, &c. for:
Ellis, 15.
Parkinson, 29.
Lake (*Watkins*), 61.

Stoneware. *See* Earthenware.

Stoppers:
Miller and Struthers, 22.

Sugar, use of:
Brooman (*Dupuy*), 11.
Nelson, 18.
Kramer, 34.
Woodbury, 48.
Martius (*Obernetter*), 50.
Carr, 77.

Sulphuret of carbon, use of:
Brooman (*Maréchal and Tessié du Motay*), 5.

Tablets, making:
Parkinson, 29.

Tannin, use of:
Brooman (*Dupuy*), 11.
Newton (*Gibson*), 60.

Tarry matters, bitumen, pitch, resin, &c., use of:
Brooman (*Maréchal and Tessié du Motay*), 5.
Brooman (*Dupuy*), 11.
Brooman (*Tessié du Motay and Maréchal*), 24.
Cotterill, 70.

Tartaric acid and its salts, use of:
Brooman (*De Lavenant*), 32.
Smith, 56.

Terra cotta. *See* Earthenware.

Tesserae. *See* Mosaics.

Thimbles. *See* Drying.

Tiles, making &c.:
Lindeman, 18.
Ranson, 19.
Malpas, 23.
Forrester, 30.
Brooman (*De Lavenant*), 32.
Scrivener, 39.
Brown, 50.
Davis, 73.

Tombstones, graves, &c., making:
Parkinson, 29.
Grainger and Girdler, 55.

Turpentine. *See* essences, use of.

Valata. *See* Balata.

Varnish, making and using:
Wilkinson, 1.
Brooman (*Dupuy*), 11.
Hughes, 16.
Brooman, (*Tessié du Motay and Maréchal*), 24.

Varnish making, &c.—*cont.*
Hughes, 31.
Brooman (*De Lavenant*), 32.
Ford, F. and L., 33.
Clark (*Kuhlmann*), 46.
Woodbury, 48.
Clauss, 49.
Hett, 57.
Lake (*Watkins*), 61.

Vases:
Hess, 76.

Waste heat, use of:
Joseph, 3.
Platt and Richardson, 14.
Newton (*Hoffmann*), 40.

Waterproofing:
Wilkinson, 1.
Newton (*Gibson*), 60.
Davis, 73.

Wax, use of:
Brooman (*Tessié du Motay and Maréchal*), 24.
Emery, 53.
Henry (*Avet*), 66.

Wearing apparel ornamenting:
Markland, 8.

Wood, preparing and using:
McAdam and Chrystal, 4.
Brooman (Dupuy), 11.
Burq, 52.
Scarratt and Dean, 54.
Smith, 56.
Newton (*Gibson*), 60.
Jobson, 64.
Ashton, 68.

Woven fabrics:
Ellis, 15.

ERRATA.

Since the publication of the first volume of the present series of Abridgments the following errata have been discovered therein :—

Page 1, line 1, *for* "Cullyn" *read* "Cullin."

Page 6, line 4, *for* "April 24" *read* "May 24."

Page 7, line 36, *for* "Williamson, James, and Spackman, Joseph," *read* "Spackman, Joseph, and Williamson, James."

Page 24, line 16, *for* "A.D. 1818" *read* "A.D. 1821."

Page 68, line 19, *for* "Harding, Hallen" *read* "Hallen, Harding."

Page 70, line 10, *for* "March" *read* "January."

Page 82, line 26, *for* "Brown" *read* "Broun."

Page 106, line 20, *for* "Léon, Louis Jardin" *read* "Jardin, Léon Louis."

Page 159, line 6, *for* "McKenzie" *read* "Mackenzie."

LONDON:
Printed by GEORGE E. EYRE and WILLIAM SPOTTISWOODE,
Printers to the Queen's most Excellent Majesty.

PATENT LAW AMENDMENT ACT, 1852.

LIST OF WORKS printed by order of THE COMMISSIONERS OF PATENTS FOR INVENTIONS, and sold at the PATENT OFFICE, 25, Southampton Buildings, Chancery Lane, London.

I.

1. SPECIFICATIONS of PATENTS for INVENTIONS, DISCLAIMERS, &c., enrolled under the Old Law, from A.D. 1617 to Oct. 1852, comprised in 13,561 Blue Books, or 691 thick vols. imp. 8vo. Total cost price about 600*l.*
2. SPECIFICATIONS of INVENTIONS, DISCLAIMERS, &c., deposited and filed under the Patent Law Amendment Act from Oct. 1, 1852, to Dec. 31, 1869, comprised in 55,351 Blue Books, or 1,746 thick vols. imp. 8vo. Total cost price, about 1,725*l.*

II.

1. CHRONOLOGICAL INDEX of PATENTS of INVENTION from A.D. 1617 to Oct. 1852. 2 vols. (1554 pages). Price 30*s.* By Post, 33*s.* 2*d.*

   ALPHABETICAL INDEX for the above period. 1 vol. (647 pages). Price 20*s.* By Post, 21*s.* 5*d.*

   SUBJECT-MATTER INDEX for the above period. 2 vols. (907 pages). Second Edition. 1857. Price 2*l.* 16*s.* By Post, 2*l.* 18*s.* 8*d.*

   REFERENCE INDEX for the above period, pointing out the Office in which each enrolled Specification may be consulted; the Books in which Specifications, Law Proceedings connected with Inventions, &c. have been noticed. 1 vol. (710 pages). Second Edition. 1862. Price 30*s.* By Post, 31*s.* 5*d.*

   APPENDIX to REFERENCE INDEX, containing abstracts from such of the early Patents and Signet Bills as describe the nature of the Invention. 1 vol. (91 pages). Price 4*s.* By Post, 4*s.* 6*d.*

2. CHRONOLOGICAL INDEXES of APPLICATIONS for PATENTS and PATENTS GRANTED from Oct. 1 to Dec. 31, 1852, and for the year 1853. 1 vol. (258 pages). Price 11*s.* By Post, 12*s.*

ALPHABETICAL INDEXES for the above periods. 1 vol. (181 pages). Price 13*s.* By Post, 13*s.* 8*d.*

SUBJECT-MATTER INDEX for 1852. 1 vol. (132 pages). Price 9*s.* By Post, 9*s.* 7*d.*

SUBJECT-MATTER INDEX for 1853. 1 vol. (291 pages). Price 16*s.* By Post, 16*s.* 11*d.*

3. CHRONOLOGICAL INDEX for 1854. 1 vol. (167 pages). Price 6*s.* By Post, 6*s.* 7*d.*

ALPHABETICAL INDEX for 1854. 1 vol. (119 pages). Price 7*s.* By Post, 7*s.* 7*d.*

SUBJECT-MATTER INDEX for 1854. 1 vol. (311 pages). Price 16*s.* 6*d.* By Post, 17*s.* 6*d.*

4. CHRONOLOGICAL INDEX for 1855. 1 vol. (188 pages). Price 6*s.* 6*d.* By Post, 7*s.* 2*d.*

ALPHABETICAL INDEX for 1855. 1 vol. (129 pages). Price 7*s.* 6*d.* By Post, 8*s.* 1*d.*

SUBJECT-MATTER INDEX for 1855. 1 vol. (311 pages). Price 17*s.* By Post, 17*s.* 11*d.*

5. CHRONOLOGICAL INDEX for 1856. 1 vol. (189 pages). Price 6*s.* 6*d.* By Post, 7*s.* 1*d.*

ALPHABETICAL INDEX for 1856. 1 vol. (143 pages). Price 8*s.* By Post, 8*s.* 7*d.*

SUBJECT-MATTER INDEX for 1856. 1 vol. (335 pages). Price 18*s.* 6*d.* By Post, 19*s.* 7*d.*

6. CHRONOLOGICAL INDEX for 1857. 1 vol. (196 pages). Price 6*s.* 6*d.* By Post, 7*s.* 2*d.*

ALPHABETICAL INDEX for 1857. 1 vol. (153 pages). Price 8*s.* By Post, 8*s.* 8*d.*

SUBJECT-MATTER INDEX for 1857. 1 vol. (367 pages). Price 19*s.* 6*d.* By Post, 20*s.* 8*d.*

7. CHRONOLOGICAL INDEX for 1858. 1 vol. (188 pages). Price 6*s.* By Post, 6*s.* 8*d.*

ALPHABETICAL INDEX for 1858. 1 vol. (148 pages). Price 8*s.* By Post, 8*s.* 7*d.*

SUBJECT-MATTER INDEX for 1858. 1 vol. (360 pages). Price 19*s.* 6*d.* By Post, 20*s.* 6*d.*

8. CHRONOLOGICAL INDEX for 1859. 1 vol. (196 pages). Price 6*s.* 6*d.* By Post, 7*s.* 1*d.*

ALPHABETICAL INDEX for 1859. 1 vol. (188 pages). Price 10*s.* By Post, 10*s.* 7*d.*

SUBJECT-MATTER INDEX for 1859. 1 vol. (381 pages). Price 20*s.* By Post, 20*s.* 11*d.*

9. CHRONOLOGICAL INDEX for 1860. 1 vol. (209 pages).
Price 7*s*. By Post, 7*s*. 7*d*.
ALPHABETICAL INDEX for 1860. 1 vol. (203 pages).
Price 10*s*. 6*d*. By Post, 11*s*. 1*d*.
SUBJECT-MATTER INDEX for 1860. 1 vol. (405 pages).
Price 22*s*. By Post, 23*s*.

10. CHRONOLOGICAL INDEX for 1861. 1 vol. (215 pages).
Price 7*s*. By Post, 7*s*. 7*d*.
ALPHABETICAL INDEX for 1861. 1 vol. (222 pages).
Price 10*s*. 6*d*. By Post, 11*s*. 2*d*.
SUBJECT-MATTER INDEX for 1861. 1 vol. (442 pages).
Price 23*s*. By Post, 24*s*. 1*d*.

11. CHRONOLOGICAL INDEX for 1862. 1 vol. (237 pages).
Price 7*s*. 6*d*. By Post, 8*s*. 2*d*.
ALPHABETICAL INDEX for 1862. 1 vol. (240 pages).
Price 11*s*. 6*d*. By Post, 12*s*. 2*d*.
SUBJECT-MATTER INDEX for 1862. 1 vol. (465 pages).
Price 23*s*. By Post, 24*s*. 1*d*.

12. CHRONOLOGICAL INDEX for 1863. 1 vol. (220 pages).
Price 7*s*. By Post, 7*s*. 7*d*.
ALPHABETICAL INDEX for 1863. 1 vol. (218 pages).
Price 11*s*. By Post, 11*s*. 8*d*.
SUBJECT-MATTER INDEX for 1863. 1 vol. (432 pages).
Price 22*s*. By Post, 23*s*.

13. CHRONOLOGICAL INDEX for 1864. 1 vol. (222 pages).
Price 7*s*. By Post, 7*s*. 7*d*.
ALPHABETICAL INDEX for 1864. 1 vol. (220 pages).
Price 11*s*. By Post, 11*s*. 8*d*.
SUBJECT-MATTER INDEX for 1864. 1 vol. (446 pages).
Price 23*s*. By Post, 24*s*. 1*d*.

14. CHRONOLOGICAL INDEX for 1865. 1 vol. (230 pages).
Price 7*s*. By Post, 7*s*. 7*d*.
ALPHABETICAL INDEX for 1865. 1 vol. (236 pages).
Price 11*s*. 6*d*. By Post, 12*s*. 2*d*.
SUBJECT-MATTER INDEX for 1865. 1 vol. (474 pages).
Price 23*s*. By Post, 24*s*. 1*d*.

15. CHRONOLOGICAL INDEX for 1866. 1 vol. (239 pages).
Price 7*s*. By Post, 7*s*. 8*d*.
ALPHABETICAL INDEX for 1866. 1 vol. (243 pages).
Price 11*s*. 6*d*. By Post, 12*s*. 2*d*.
SUBJECT-MATTER INDEX for 1866. 1 vol. (465 pages).
Price 23*s*. By Post, 24*s*. 4*d*.

16. CHRONOLOGICAL INDEX for 1867. 1 vol. (254 pages).
Price 7*s*. 6*d*. By Post, 8*s*. 2*d*.
ALPHABETICAL INDEX for 1867. 1 vol. (258 pages).
Price 12*s*. By Post, 12*s*. 8*d*.
SUBJECT-MATTER INDEX for 1867. vol (508 pages).
Price 25*s*. By Post, 26*s*. 2*d*.

DESCRIPTIVE INDEX (Abridgments of Provisional and Complete Specifications) for 1867.

a. Quarter ending 31st March. 1 vol. (228 pages). Price 1*s.* 8*d.* By Post, 2*s.* 1*d.*

b. Quarter ending 30th June. 1 vol. (224 pages). Price 1*s.* 8*d.* By Post, 2*s.* 1*d.*

c. Quarter ending 30th September. 1 vol. (196 pages). Price 1*s.* 8*d.* By Post, 2*s.*

d. Quarter ending 31st December. vol. (232 pages). Price 1*s.* 8*d.* By Post, 2*s.* 1*d.*

17. CHRONOLOGICAL INDEX for 1868 1 vol. (274 pages). Price 8*s.* By Post, 8*s.* 8*d.*

ALPHABETICAL INDEX for 1868. 1 vol. (291 pages). Price 13*s.* By Post, 13*s.* 10*d.*

SUBJECT MATTER INDEX for 1868. 1 vol. (632 pages). Price 30*s.* By Post, 31*s.* 5*d.*

DESCRIPTIVE INDEX (Abridgments of Provisional and Complete Specifications) for 1868.

a. Quarter ending 31st March. 1 vol. (236 pages). Price 1*s.* 8*d.* By Post, 2*s.* 1*d.*

b. Quarter ending 30th June. 1 vol. (218 pages). Price 1*s.* 8*d.* By Post, 2*s.* 1*d.*

c. Quarter ending 30th September. 1 vol. (194 pages). Price 1*s.* 8*d.* By Post, 2*s.*

d. Quarter ending 31st December. 1 vol. (224 pages). Price 1*s.* 8*d.* By Post, 2*s.* 1*d.*

18. CHRONOLOGICAL AND DESCRIPTIVE INDEX (containing the Abridgments of Provisional and Complete Specifications) for 1869.

a. Quarter ending 31st March. 1 vol. (226 pages). Price 1*s.* 8*d.* By Post, 2*s.* 1*d.*

b. Quarter ending 30th June. 1 vol. (234 pages). Price 1*s.* 8*d.* By Post, 2*s.* 1*d.*

c. Quarter ending 30th September. 1 vol. (200 pages). Price 1*s.* 8*d.* By Post, 2*s.* 1*d.*

ALPHABETICAL INDEX for 1869. 1 vol. (272 pages.) Price 13*s.* By Post, 13*s.* 9*d.*

III.

ABRIDGMENTS (in Classes and Chronologically arranged) of SPECIFICATIONS of PATENTED INVENTIONS, from the earliest enrolled to those published under the Act of 1852.

These books are of 12mo. size, and each is limited to inventions of one class only. They are so arranged as to form at once a Chronological, Alphabetical, Subject-matter, and Reference Index to the class to which they relate. Inventors are strongly recommended, before applying for Letters Patent, to consult the classes of Abridgments of Specifications which relate to the subjects of their inventions, and by the aid of these works to select the Specifications they may consider it necessary to examine in order to ascertain if their inventions are new.

The following series of Abridgments do not extend beyond the end of the year 1866. From that date the Abridgments have not been published in classes, but will be found in chronological order in the Quarterly Volumes of the "Chronological and Descriptive Index" (*see* Section II. of this List of Works). It is intended, however, to publish these Abridgments in classes as soon as the Abridgments of all the Specifications from the earliest period to the end of 1866 have appeared in a classified form. Until that takes place the Inventor (by the aid of the Subject Matter Index for each year) can continue his examination of the Abridgments relating to the subject of his invention in the Chronological and Descriptive Index.

The classes already published are,—

1. DRAIN TILES AND PIPES, price 4*d.*, by post 5*d.*
2. SEWING AND EMBROIDERING, price 6*d.*, by post 7*d.*
3. MANURE, price 4*d.*, by post 5*d.*
4. PRESERVATION OF FOOD, price 4*d.*, by post 5*d.*
5. MARINE PROPULSION, price 1*s.*10*d.*, by post 2*s.* 2*d.*
6. MANUFACTURE OF IRON AND STEEL, Parts I., II., & III., A.D. 1621–1857, price 1*s.* 6*d.*, by post 1*s.*9*d.* Part IV., A.D. 1857–1865, price 2*s.* 6*d.*, by post 2*s.* 8*d.*
7. AIDS TO LOCOMOTION, price 6*d.*, by post 7*d.*
8. STEAM CULTURE, price 8*d.*, by post 10*d.*
9. WATCHES, CLOCKS, AND OTHER TIMEKEEPERS, price 8*d.*, by post 10*d.*
10. FIRE-ARMS AND OTHER WEAPONS, AMMUNITION, AND ACCOUTREMENTS, price 1*s.* 4*d.*, by post 1*s.* 8*d.*
11. PAPER. MANUFACTURE OF PAPER PASTEBOARD, AND PAPIER-MÂCHÉ, price 10*d.*, by post 1*s.*
12. PAPER. CUTTING, FOLDING, AND ORNAMENTING; INCLUDING ENVELOPES, CARDS, PAPER-HANGINGS, &c., price 8*d.*, by post 10*d.*
13. TYPOGRAPHIC, LITHOGRAPHIC, & PLATE PRINTING. Part I., A.D. 1617–1857, price 2*s.* 8*d.*, by post 3*s.* 4*d.*—Part II., A.D. 1858–1861, price 2*s.*, by post 2*s.* 6*d.*
14. BLEACHING, DYEING, AND PRINTING YARNS AND FABRICS, price 3*s.* 4*d.*, by post 4*s.* 2*d.*
15. ELECTRICITY AND MAGNETISM, THEIR GENERATION AND APPLICATIONS, price 3*s.* 2*d.*, by post 4*s.*
16. MANUFACTURE AND APPLICATIONS OF INDIA-RUBBER, GUTTA-PERCHA, &c.; INCLUDING AIR, FIRE, AND WATER-PROOFING, price 2*s.* 8*d.*, by post 3*s.* 4*d.*
17. PRODUCTION AND APPLICATIONS OF GAS, price 2*s.* 4*d.*, by post 3*s.*
18. METALS AND ALLOYS, price 1*s.* 10*d.*, by post 2*s.* 4*d.*
19. PHOTOGRAPHY, Part I., A.D. 1839–1859, price 8*d.*, by post 10*d.* Part II., A.D. 1860–1865, price 1*s.* 8*d.*, by post 1*s.* 10*d.*
20. WEAVING, price 4*s.*, by post 5*s.*
21. SHIP BUILDING, REPAIRING, SHEATHING, LAUNCHING, &c., Part I., A.D. 1618–1860, price 2*s.* 4*d.*, by post 3*s.*—Part II., A.D. 1861–1866, price 2*s.* 6*d.*, by post 3*s.*
22. BRICKS AND TILES, price 1*s.*, by post 1*s.* 4*d.*
23. PLATING OR COATING METALS WITH METALS, Part I., A.D. 1637–1860, price 10*d.*, by post 1*s.* 2*d.* Part II., A.D. 1861–1865, price 10*d.*, by post 11*d.*
24. POTTERY, Part I., A.D. 1626–1861, price 10*d.*, by post 1*s.* Part II., A.D. 1862–1866, price 6*d.*, by post 7*d.*
25. MEDICINE, SURGERY, AND DENTISTRY, price 3*s.* 4*d.*, by post 4*s.*
26. MUSIC AND MUSICAL INSTRUMENTS, price 3*s.* 6*d.*, by post 3*s.* 9*d.*
27. OILS—ANIMAL, VEGETABLE, AND MINERAL, price 6*s.* 6*d.*, by post 7*s.*
28. SPINNING; INCLUDING THE PREPARATION OF FIBROUS MATERIALS, AND THE DOUBLING OF YARNS AND THREADS, Part I., A.D. 1624–1863, price 24*s.*, by post 25*s.* 5*d.*—Part II., A.D. 1864–1866, price 2*s.* by post 2*s.* 4*d.*
29. LACE AND OTHER LOOPED AND NETTED FABRICS, price 10*s.*, by post 10*s.* 8*d.*
30. PREPARATION AND COMBUSTION OF FUEL, price 17*s.*, by post 17*s.* 9*d.*
31. RAISING, LOWERING, AND WEIGHING, Part I., A.D. 1617–1865, price 11*s.*, by post 11*s.* 8*d.*—Part II., A.D. 1866, price 6*d.*, by post 7*d.*
32. HYDRAULICS, price 15*s.*, by post 15*s.* 10*d.*

33. RAILWAYS, price 5*s.*, by post 5*s.*4*d.*

34. SADDLERY, HARNESS, STABLE FITTINGS, &c., price 1*s.*, by post 1*s.* 2*d.*

35. ROADS AND WAYS, price 1*s.*, by post 1*s.* 2*d.*

36. BRIDGES, VIADUCTS, AND AQUEDUCTS, price 10*d.*, by post 1*s.*

37. WRITING INSTRUMENTS AND MATERIALS, price 1*s.* 4*d.*, by post 1*s.* 7*d.*

38. RAILWAY SIGNALS AND COMMUNICATING APPARATUS, price 5*s.* 10*d.*, by post 6*s.* 2*d.*

39. FURNITURE AND UPHOLSTERY, price 2*s.*, by post 2*s.* 4*d.*

40. ACIDS, ALKALIES, OXIDES, AND SALTS, price 3*s.* 8*d.*, by post 4*s.* 4*d.*

41. AERONAUTICS, price 4*d.*, by post 5*d.*

42. PREPARATION AND USE OF TOBACCO, price 10*d.*, by post 1*s.*

The following classes are in course of preparation :—

STEAM ENGINES.

VENTILATION.

CARRIAGES AND OTHER VEHICLES FOR RAILWAYS.

AGRICULTURE.

OPTICAL, MATHEMATICAL, NAUTICAL, AND ASTRONOMICAL INSTRUMENTS.

STONE, MARBLE, AND CEMENTS.

TUNNELS, SUBWAYS, AND SEWERS.

MEASURING FABRICS, YARNS, &c.

SKINS, HIDES, AND LEATHER.

AIR AND GAS ENGINES.

UMBRELLAS, PARASOLS, AND WALKING STICKS.

FARRIERY.

BOOKS, PORTFOLIOS, CARD-CASES, &c.

SUGAR.

CARRIAGES AND OTHER VEHICLES FOR COMMON ROADS.

NEEDLES AND PINS.

SEWING AND EMBROIDERING.—Part II.

PRESERVATION OF FOOD.—Part II.

MARINE PROPULSION.—Part II.

WATCHES, CLOCKS AND OTHER TIMEKEEPERS.—Part II.

FIRE-ARMS AND OTHER WEAPONS, AMMUNITION, AND ACCOUTREMENTS.—Part II.

PAPER. MANUFACTURE OF PAPER PASTEBOARD, AND PAPIER-MÂCHÉ —Part II.

PAPER. CUTTING, FOLDING, AND ORNAMENTING; INCLUDING ENVELOPES, CARDS, PAPER-HANGINGS, &c.—Part II.

TYPOGRAPHIC, LITHOGRAPHIC, AND PLATE PRINTING.—Part III.

BLEACHING, DYEING, AND PRINTING YARNS AND FABRICS.—Part II.

ELECTRICITY AND MAGNETISM, THEIR GENERATION AND APPLICATIONS.—Part II.

PRODUCTION AND APPLICATIONS OF GAS.—Part II.

WEAVING.—Part II.

BRICKS AND TILES.—Part II.

MEDICINE, SURGERY, AND DENTISTRY.—Part II.

MUSIC AND MUSICAL INSTRUMENTS —Part II.

LACE AND OTHER LOOPED AND NETTED FABRICS.—Part II.

PREPARATION AND COMBUSTION OF FUEL.—Part II.

HYDRAULICS.—Part II.

RAILWAYS.—Part II.

IV.

COMMISSIONERS of PATENTS' JOURNAL, published on the evenings of Tuesday and Friday in each week. Price 2*d.* By Post, 3*d.* Annual Subscription, including postage, 26*s.* 6*d.*, which may be remitted by Post Office Order, made payable at the Post Office, Holborn, to Mr. Bennet Woodcroft, Clerk to the Commissioners, Patent Office.

CONTENTS OF JOURNAL.

1. Applications for Letters Patent.
2. Grants of Provisional Protection for six months.
3. Inventions protected for six months by the deposit of a Complete Specification.

4. Notices to proceed.
5. Patents sealed.
6. Patents extended.
7. Patents cancelled.
8. Patents on which the third year's stamp duty of 50*l.* has been paid.
9. Patents which have become void by non-payment of the stamp duty of 50*l.* before the expiration of the third year.
10. Patents on which the seventh year's stamp duty of 100*l.* has been paid.
11. Patents which have become void by non-payment of the stamp duty of 100*l.* before the expiration of the seventh year.
12. Colonial Patents and Patent Law.
13. Foreign Patents and Patent Law.
14. Weekly price lists of printed Specifications, &c.
15. Official advertisements and notices of interest to Patentees and Inventors generally.

V.

INDEX to FOREIGN SCIENTIFIC PERIODICALS contained in the Free Public Library of the Patent Office, published on every alternate Friday evening. Price 2*d.* By Post, 3*d.* Annual subscription, including postage, 6*s.* 6*d.*, which may be remitted by Post Office Order, made payable at the Post Office, Holborn, to Mr. Bennet Woodcroft, Clerk to the Commissioners, Patent Office.

VI.

1. PATENT LAW AMENDMENT ACTS (15 & 16 Vict. cap. 83, A.D. 1852; 16 Vict. cap. 5, A.D. 1853; and 16 & 17 Vict. cap. 115, A.D. 1853); together with the RULES and REGULATIONS issued by the Commissioners of Patents for Inventions, and by the Lord Chancellor and the Master of the Rolls, under the Acts 15 & 16 Vict. c. 83, and 16 & 17 Vict. c. 115. Price 6*d.* By Post, 7*d.*
2. APPENDIX to the SPECIFICATIONS of ENGLISH PATENTS for REAPING MACHINES. By B. Woodcroft, F.R.S. Price 6*s.* 6*d.* By Post, 6*s.* 11*d.*
3. INDEX to ALL INVENTIONS PATENTED in ENGLAND from 1617 to 1854 inclusive, arranged under the greatest number of heads, with parallel references to INVENTIONS and DISCOVERIES described in the scientific works of VARIOUS NATIONS, as classified by Professor Schubarth. By B. Woodcroft, F.R.S. Price 1*s.* By Post, 1*s.* 1*d.*
   The foreign works thus indexed form a portion of the Library of the Commissioners of Patents, where they may be consulted.
4. EXTENSION of PATENTS to the COLONIES.—Abstract of Replies to the Secretary of State's Circular Despatch of January 2, 1853, on the subject of the Extension of Patents for Inventions to the Colonies. Second Edition, with Revised Table. 1861. Price 2*s.* By Post 2*s.* 2*d.*

5. SUPPLEMENT to the SERIES of LETTERS PATENT and SPECIFICATIONS, from A.D. 1617 to Oct. 1852; consisting for the most part of Reprints of scarce Pamphlets, descriptive of the early patented Inventions comprised in that Series. In one vol. (containing 11 tracts), price 9*s.* 6*d.*, by post, 10*s.*, or each tract separately at the price printed thereon.

CONTENTS.

1. Metallica; or the Treatise of Metallica, briefly comprehending the doctrine of diverse new metallical inventions, &c. By SIMON STURTEVANT. (*Letters Patent, dated 29th February* 1611.) Price 1*s.* 4*d.*; by post, 1*s.* 5*d.*
2. A Treatise of Metallica, but not that which was published by Mr. Simon Sturtevant, upon his Patent, &c. By JOHN ROVENZON. (*Letters Patent granted A.D.* 1612.) Price 4*d*; by post, 5*d.*
3. A Commission directed to Sir Richard Wynne and others to inquire upon oath whether NICHOLAS PAGE or Sir NICHOLAS HALSE was the first inventor of certaine kilnes for the drying of malt, &c. &c. (*Letters Patent, Nos.* 33 *and* 85, *respectively dated 8th April* 1626, *and 23rd July* 1635.) Price 2*d.*; by post, 3*d.*
4. DUD DUDLEY'S Metallum Martis; or iron made with pit-coale, sea-coale, &c. (*Letters Patent, Nos.* 18 *and* 117, *respectively dated 22nd February* 1620, *and 2nd May* 1638.) Price 8*d.*; by post, 9*d.*
5. Description of the nature and working of the Patent Waterscoop Wheels invented by WILLIAM WHELER, as compared with the raising wheels now in common use. By J. W. B. Translated from the Dutch by Dr. Tolhausen. (*Letters Patent, No.* 127, *dated 24th June* 1642.) Price 2*s.*; by post, 2*s.* 2*d.*
6. An exact and true definition of the stupendous Water-commanding Engine invented by the Right Honourable (and deservedly to be praised and admired) EDWARD SOMERSET, Lord Marquis of WORCESTER, &c. &c. (*Stat.* 15 *Car. II. c.* 12. *A.D.* 1663.) Price 4*d.*; by post, 5*d.*
7. Navigation improved; or the art of rowing ships of all rates in calms with a more easy, swift, and steady motion than oars can. By THOMAS SAVERY. (*Letters Patent, No.* 347, *dated 10th January* 1696.) Price 1*s.*; by post, 1*s.* 1*d.*
8. The Miner's Friend; or an engine to raise water by fire, described, &c. By THOMAS SAVERY. (*Letters Patent, No.* 356, *dated 25th July* 1698, *and Stat.* 10 *&* 11 *Will. III. c.* 31, *A.D.* 1699.) Price 1*s.*; by post, 1*s.* 1*d.*
9. Specimina Ichnographica; or a brief narrative of several new inventions and experiments, particularly the navigating a ship in a calm, &c. By JOHN ALLEN, M.D. (*Letters Patent, No.* 513, *dated 7th August* 1729.) Price 8*d.*; by post, 9*d.*
10. A description and draught of a new-invented Machine for carrying vessels or ships out of or into any harbour, port, or river against wind and tide, or in a calm, &c. By JONATHAN HULLS. (*Letters Patent, No.* 556, *dated 21st December* 1736.) Price 8*d.*; by post, 9*d.*
11. An historical account of a new method for extracting the foul air out of ships, &c., with the description and draught of the machines by which it is performed, &c. By SAMUEL SUTTON, the Inventor. To which are annexed two relations given thereof to the Royal Society by Dr. Mead and Mr. Watson. (*Letters Patent, No.* 602, *dated 16th March* 1744.) Price 1*s.*; by post, 1*s.* 1*d.*

A FREE LIBRARY and READING ROOMS are open to the Public daily, from 10 till 4 o'clock, in the Office of the Commissioners of Patents, 25, Southampton Buildings, Chancery Lane. In addition to the printed Specifications, Indexes, and other publications of the Commissioners, the Library includes a Collection of the leading British and Foreign Scientific Journals, and text-books in the various departments of science and art.

Complete sets of the Commissioners of Patents' publications (each set including nearly 2,650 volumes) have been presented

to the authorities of the most important towns in the kingdom, on condition that the works shall be rendered daily accessible to the public, for reference or for copying, free of all charge. The following list gives the names of the towns, and shows the place of deposit, so far as ascertained, of each set of the works thus presented :—

Aberdeen (*Mechanics' Institution*).
Belfast (*Queen's College*).
Beverley (*Guildhall*).
Birmingham (*Central Free Library—Reference Department, Ratcliff Place*).
Blackburn (*Free Library and Museum, Town Hall Street*).
Bolton-le-Moors (*Public Library, Exchange Buildings*).
Bradford, Yorkshire (*Borough Accountant's Office, Corporation Buildings, Swain Street*).
Brighton (*Town Hall*).
Bristol (*City Library, King Street*).
Burnley (*Office of the Burnley Improvement Commissioners*).
Bury.
Carlisle (*Public Free Library, Police Office*).
Chester (*Town Hall, Northgate St.*)
Cork (*Royal Cork Instn., Nelson Place.*)
Crewe (*Railway Station*).
Darlington (*Mechanics' Institute, Skinnergate*).
Dorchester.
Drogheda.
Dublin (*Royal Dublin Soy, Kildare St.*)
Dundalk (*Free Library*).
Falmouth (*Public Liby, Church St.*)
Gateshead (*Mechanics' Institute*).
Gorton (*Railway Station*).
Glasgow (*Stirling's Liby, Miller St.*)
Grimsby, Great (*Mechanics' Institution, Victoria Street*).
Halifax.
Hanley, Staffordshire Potteries (*Town Hall*).
Hertford (*Free Public Library, Town Hall*).
Huddersfield (*Improvement Commissioners' Offices, South Parade*).
Hull (*Mechanics' Institute, George Street*).
Ipswich (*Museum Library, Museum Street*).
Keighley (*Mechanics' Institute, North Street*).
Kidderminster (*Public Free Library, Public Buildings, Vicar Street*).
King's Lynn, Norfolk (*Stanley Library, Athenæum*).
Lancaster (*Mechanics' Institute, Market Street*).
Leamington Priors (*Public Library, Town Hall*).
Leeds (*Town Clerk's Office, Town Hall*).
Leicester (*Corporation Library, Town Hall*).
Limerick (*Town Hall*).
Liverpool (*Free Public Library, William Brown Street*).
London (*British Museum*).
——— (*Society of Arts, John Street, Adelphi*).
Macclesfield (*Useful Knowledge Society*).
Maidstone (*Free Library*).
Manchester (*Free Library, Camp Field*).
Montrose (*Free Library*).
Newark, (*Mechanics' Institute, Middle Gate*).
Newcastle-upon-Tyne (*Literary and Philosophical Society*).
Newport, Monmouth (*Commercial Room, Town Hall*).
Northampton.
Norwich (*Free Library, St. John's, Maddermarket*).
Nottingham (*Free Library*).
Oldham (*School of Arts and Sciences, Lyceum*).
Oxford (*Public Free Library, Town Hall*).
Paisley (*Government School of Design, Gilmour Street*).
Plymouth (*Mechanics' Institute, Princess Square*).
Preston, Lancashire (*Dr. Shepherd's Library, the Institution, Avenham*).
Reading (*Literary, Scientific, and Mechanics' Institution, London St.*)
Rochdale (*Commissioners' Rooms, Smith Street*).
Rotherham (*Board of Health Offices, Howard Street*).
Salford (*Royal Museum and Library, Peel Park*).
Sheffield (*Free Public Library, Surrey Street*).
Shrewsbury (*Public Museum, College Street*).
Southampton (*Hartley Institution*).
Stirling (*Burgh Library, Town House, Broad Street*).
Stockport (*Museum, Vernon Park*).
Sunderland (*Corporation Museum, Athenæum, Fawcett Street*).
Wakefield (*Mechanics' Institution, Barstow Square*).
Warrington (*The Museum and Library*).
Waterford (*Town Hall, The Mall*).
Wexford (*Mechanics' Institute, Crescent Quay*).
Wigan.
Wolverhampton (*School of Practical Art, Darlington Street*).
Wolverton (*Railway Station*).
York (*Lower Council Chamber, Guildhall*).

The Commissioners' publications have also been presented to the following Public Offices, Seats of Learning, Societies, British Colonies, and Foreign States :—

Public Offices, &c.

Admiralty—Director of Works' Department.
Chief Constructor's Department.
Chatham Dockyard.
Sheerness ditto.
Portsmouth ditto.
Devonport ditto.
Pembroke ditto.
Artillery Institute, Woolwich.
Board of Trade, Whitehall.
Ordnance Office—Pall Mall.
Small Arms Factory, Enfield.
War Office, Pall Mall.
India Office.
Royal School of Mines, &c., Jermyn Street, Piccadilly..
Dublin Castle, Dublin.
Record and Writ Office, Chancery, Dublin.
Office of Chancery, Edinburgh.

Seats of Learning and Societies.

Cambridge University.
Trinity College, Dublin.
Queen's College, Galway.
Incorporated Law Society, Chancery Lane, London.

British Colonies.

Antigua.
Barbados.
British Guiana.
Canada—Library of Parliament, Ottawa.
Bureau of Agriculture, Toronto.
Board of Arts and Manufactures, Montreal.
Cape of Good Hope.
Ceylon.
India—Bengal.
Bombay.
Madras.
N.-W. Provinces.
Jamaica.
Malta.
Mauritius.
New Brunswick.
Newfoundland.
New South Wales.
New Zealand.
Nova Scotia.
Prince Edward Island.
South Australia—Colonial Institute, Adelaide.
Tasmania.
Trinidad.
Victoria—Parliamentary Library, Melbourne.
Patent Office, Melbourne.
Public Library, Melbourne.

Foreign States.

Argentine Republic—Buenos Ayres.
Austria—Handels Ministerium, Vienna.
Bavaria—Königliche Bibliothek, Munich.
Belgium—Ministère de l'Intérieur, Brussels.
Musée de l'Industrie, Brussels.
France—Bibliothèque Impériale, Conservatoire des Arts et Métiers, Hôtel de Ville, Société Industrielle de Mulhouse. } Paris.
Gotha—Ducal Friedenstein Collection.
Italy—Ufficio delle Privative, Florence.
Netherlands—Harlem.
Prussia—Gewerbe-Akademie, Berlin.
Königliche Bibliothek, Berlin.
Königliche Polytechnische Schule, Hanover.
Russia—Bibliothèque Impériale, St. Petersburg.
Saxony—Polytechnische Schule, Dresden.
Spain—Madrid.
Sweden—Teknologiska Institutet, Stockholm.
United States—Patent Office, Washington.
Astor Library, New York.
State Library, Albany.
Franklin Institute, Philadelphia.
Free Library, Boston.
Library Company, Philadelphia.
Library Association, Chicago.
Peabody Institute, Baltimore.
Historical Society, Madison, Wisconsin.
Cornell University, Ithaca, N.Y.
Wurtemberg—Bibliothek des Musterlagers, Stuttgart.

Grants of complete series of Abridgments of Specifications have been made to the undermentioned Mechanics, Literary, and Scientific Institutions :—

Aberystwith (*Literary and Working Men's Reading Room*).
Alnwick (*Scientific and Mechanical Institution*).
Altrincham (*Altrincham and Bowdon Literary Institution*).
Ashby-de-la-Zouch (*Mutual Improvement Society*).
Bacup (*Mechanics' Institution*).
Ballymoney (*Town Hall*).
Banbridge (*Literary and Mutual Improvement Society*).
Banbury (*Mechanics' Institution*).
Barnstaple (*Literary and Scientific Institution*).
Bath (*Athenæum*).
Batley (*Mechanics' Institution*).
Battle (*Young Men's Christian Association*).
Belfast (*Athenæum*).
Berkhampstead, Great (*Working Men's College*).
Birmingham (*Birmingham Heath and Smethwick Working Men's Club and Institute*).
——— (*Bloomsbury Institution*).
——— (*Central Lending Library*)
——— (*Deritend Working Men's Association*).
——— (*Graham Street Institution*).
Bodmin (*Literary Institution*).
Bolton (*Mechanics' Institute*).
——— (*School of Art*).
Bradford, near Manchester (*Bradford Working Men's Club*).
———, Yorkshire (*Library and Literary Society*).
——— ——— (*Mechanics' Institute*).
Brampton, near Chesterfield (*Local Museum and Literary Institute*).
Breage, Cornwall (*Breage Institution*).
Bristol (*Athenæum*).
——— (*Institution*).
——— (*Law Library Society*).
——— (*Library*).
Broomsgrove (*Literary and Mechanics' Institute*).
Burnley (*Mechanics' Institution*).
——— (*Literary Institution*).
Burslem (*Wedgwood Institute*).
Bury St. Edmund's (*Mechanics' Institution*).
Canterbury (*Working Men's Club*).
Cardiff (*Free Library and Museum*).
Cardigan (*Mechanics' Institute*).
Carharrack (*Literary Institute*).
Carmarthen (*Literary and Scientific Institution*).
Cheltenham (*Literary and Philosophical Society*).
——— (*Permanent Library*).
——— (*Working Men's Club*).
Chertsey (*Literary and Scientific Institution*).
Chester (*City Library and Reading Room*).
Chesterfield (*Mechanics' Institution*).
Chichester (*Literary and Philosophical Society*).
——— (*Literary Society and Mechanics' Institute*).
Coalbrookdale (*Literary and Scientific Institution*).
Cockermouth (*Mechanics' Institution*).
Colchester (*Literary Institution*).
——— (*Young Men's Christian Association*).
Compstall (*Athenæum*).
Coventry (*Free Library*).
——— (*Institute*).
——— (*School of Art*).
Crediton (*Working Men's Club*).
Dartmouth (*Mutual Improvement Society*).
Darwen, Over (*Mechanics' Institution*).
Deal (*Deal and Walmer Institute*).
Denton (*Denton and Haughton Mechanics' Institution*).
Derby (*Mechanics' Institution*).
Devonport (*Mechanics' Institute*).
Dewsbury (*Mechanics' Institution*).
Doncaster (*Free Library*).
——— (*Great Northern Mechanics' Institute*).
Dorchester (*County Museum and Library*).
——— (*Working Men's Institute*).
Dudley (*Mechanics' Institution*).
Dukinfield (*Mechanics' Institute*).
——— (*Village Library and Reading Room*).
Dumfries (*Mechanics' Institution*).
Eagley, Bolton-le-Moors (*Library and Institute*).
Earlestown, Newton-le-Willows (*Mutual Improvement Society*).
Edinburgh (*Horological Society*).
——— (*Mechanics Library*).
——— (*Philosophical Institution*).
——— (*Royal Society of Arts*).
——— (*Royal Scottish Society of Arts*).
——— (*Subscription Library*).
——— (*Watt Institution and School of Art*).
——— (*Working Men's Club*).
Egham (*Literary Institute*).
Egremont (*Mechanics' Institution*).
Exeter (*Devon and Exeter Institution*).
Faversham (*Institute*).
Frome (*Literary and Scientific Institution*).
Gainsborough (*Literary, Scientific and Mechanics' Institute*).
Garforth, near Leeds (*Working Men's Club*).
Glasgow (*Athenæum*).

Glasgow (*Central Working Men's Club and Institute*).
——— (*Institution of Engineers in Scotland*).
——— (*Mechanics' Institution, Bath Street*).
——— (*Philosophical Society*).
Grantham (*Public Literary Institution*).
Gravesend (*Gravesend and Milton Library and Reading Rooms*).
Greenwich (*Working Men's Institute*).
Guildford (*Mechanics' Institute*).
Halesworth (*Mechanics' Institute*).
Halifax (*Literary and Philosophical Society*).
——— (*Mechanics' Institute*).
——— (*Working Men's College*).
Haslingdon (*Institute*).
Hastings (*Literary and Scentific Institute*).
Hawarden (*Literary Institution.*)
Helston (*Reading Room and Library*).
Hereford (*Natural History, Philosophical, Antiquarian, and Literary Society*).
Hertford (*Literary and Scientific Institution*).
Heywood (*Mechanics' Institute*).
Holbeck (*Mechanics' Institution*).
Hollingwood (*Working Men's Club*).
Holywell Green (*Mechanics' Institution*).
Huddersfield (*Mechanics' Institution*).
Hull (*Church Institute*).
—— (*Literary, Scientific and Mechanics' Institute*).
—— (*Lyceum Library*).
—— (*Royal Institution, Albion Street*).
Hull (*Young People's Institute*).
Huntingdon (*Literary and Scientific Institution*).
Kendal (*Christian and Literary Institute*).
——— (*Working Men's Institute*).
Kidderminster (*Mechanics' Institute*).
Lancaster (*Mechanics' Institute and School of Science*).
Leeds (*Church Institute*).
——— (*Library*).
——— (*Mechanics' Institution and Literary Society*).
——— (*Philosophical and Literary Society*).
——— (*Working Men's Institute*).
——— (*Young Men's Christian Association*).
Leighton Buzzard (*Working Men's Mutual Improvement Society*).
Leith (*Mechanics' Subscription Library*).
Lewes (*Mechanics' Institute*).
——— (*School of Science and Art*).
Lincoln (*Mechanics' Institute*).
Liverpool (*Institute*).
——————— (*Mechanics' Institute*).
——————— (*Medical Institution*).
——————— (*Polytechnic Society*).
Llanelly (*Chamber of Commerce and Reading Room*).
London (*Athenæum Club, Pall Mall*).
——— (*Beaumont Institute, Mile End*).
——— (*Bedford Working Men's Institute, Spitalfields*).
——— (*Birkbeck Institution, Southampton Buildings, Chancery Lane*).
——— (*Bow Common Working Men's Club, Devon's Road, Bow Common*).
——— (*Christchurch Working Men's Club, New Street, Lark Hall Lane, Clapham*).
——— (*Clerkenwell Club, Lower Rosoman Street*).
——— (*Holloway Working Men's Club and Institute, Holloway Road*).
——— (*Literary and Scientific Society, Wellington Street, Islington.*)
——— (*Literary and Scientific Institution, Walworth*).
——— (*St. James and Soho Working Men's Club, Rupert Street, Soho*).
——— (*St. Mary Charterhouse Working Men's Club, Golden Lane*).
——— (*South London Working Men's College, Blackfriars Road*).
——— (*Southwark Working Men's Club, Broadwall, Stamford Street*).
——— (*Spring Vale Institution, Hammersmith*).
——— (*Working Men's Club, Brixton Hill*).
——— (*Working Men's Club, St. Mark's, Victoria Docks*).
——— (*Working Men's Club and Institute Union, Strand*).
——— (*Working Men's Club and Institute, Battersea*).
——— (*Working Men's College, Great Ormond Street*).
Loughborough (*Working Men's Club and Institute*).
Madeley (*Anstice Memorial, Workmen's Club and Institute*).
Manchester (*Athenæum*).
——————— (*Law Library*).
——————— (*Mechanics' Institution*).
——————— (*Natural History Museum, Peter Street*).
——————— (*Portico Library, Mosley Street*).
——————— (*Royal Exchange Library*).
Mansfield (*Co-operative Industrial Society*).
——————— (*Mechanics', Artizans', and Apprentices' Library*).
Merthyr-Tydfil (*South Wales Institute of Engineers*).
Middlesborough (*Mechanics' Institution*).
Modbury (*Mechanics' Institution*).
Mossley (*Mechanics' Institute*).
Newark (*Mechanics' Institute*).
Newcastle-upon-Tyne (*Mechanics' Institution*).
Newcastle-upon-Tyne (*Working Men's Club*).
New Mills, near Stockport (*Mechanics' Institute*).

Newport, Isle of Wight (*Young Men's Society and Reading Room*).
Northampton (*Mechanics' Institute*).
Nottingham (*Free Library*).
——— (*Mechanics' Institution*).
——— (*Subscription Library, Bromley House*).
Oldham (*Analytic Literary Institution*).
——— (*Mechanics' Institution, Werneth*).
Ormskirk (*Public Library*).
Oswestry (*Institute*).
Patricroft (*Mechanics' Institution*).
Pembroke Dock (*Mechanics' Institute*).
Pendleton (*Mechanics' Institution*).
Penryn (*Working Men's Club and Reading Room*).
Perth (*Mechanics' Library, High Street*).
Peterborough (*Mechanics' Institution*).
Plymouth (*Working Men's Institute*).
Poole (*Literary and Scientific Institution*)
——— (*Mechanics' Institute*).
Portsea (*Athenæum and Mechanics' Institution*).
Preston (*Avenham Institution*).
——— (*Society of Useful Knowledge*).
Rawtenstall (*Mechanics' Institution*).
Richmond (*Working Men's College*).
Rotherham (*Rotherham and Masbro' Literary and Mechanics' Institute*).
Royston (*Institute*).
Ryde, Isle of Wight (*Philosophical and Scientific Society*).
Saffron Walden (*Literary and Scientific Institution*).
St. Just (*Institution*).
St. Leonard's (*Mechanics' Institution*).
Salford (*Working Men's Club*).
Saltaire (*Literary Institute*).
Selby (*Mechanics' Institute*).
Sheffield (*Branch Free Library*).
——— (*Literary and Philosophical Society, School of Arts*).
Skipton, Yorkshire (*Mechanics' Institute*).
Southampton (*Hartley Institution*).
——— (*Polytechnic Institution*).
Southport (*Athenæum*).
South Shields (*Working Men's Institute and Club*).
Spalding (*Mechanics' Institute*).
——— (*Christian Young Men's Association*).
Staines (*Literary and Scientific Institution*).
Staines (*Mechanics' Institute and Reading Room*).
Stamford (*Institution*).
Stourbridge (*Church of England Association*).
——— (*Iron Works Reading Room and Library*).
——— (*Mechanics' Institution*).
——— *Working Men's Institute*).
Stratford (*Working Men's Hall*).
Sunderland (*Working Men's Club*).
Swansea (*Royal Institution of South Wales*).
——— (*Working Man's Institute*).
Tavistock (*Mechanics' Institute*).
——— (*Public Library*).
Thornton, near Bradford (*Mechanics' Institute*).
Thornton Heath, Croydon (*Workmen's Club*).
Todmorden (*Mechanics' Institution*).
Truro (*Cornwall County Library*).
——— (*Institution*).
——— (*Royal Institution of Cornwall*).
Tunbridge Wells (*Mechanics' Institution*).
——— (*Society of Literature and Science*).
Turton near Bolton (*Chapel Town Institute*).
Ulverston (*Temperance Hall*).
Uttoxeter (*Mechanics' Literary Institute*).
Wakefield (*Mechanics' Institute*).
Watford (*Literary Institute*).
Wells, Somerset (*Mechanics' Institution, Grove Lane*).
——— (*Young Men's Society*).
Whaleybridge (*Mechanics' Institute*).
Whitby (*Institute*).
——— (*Museum*).
——— (*Subscription Library*).
Whitehaven (*Mechanics' Institute*).
——— (*Working Men's Reading Room*).
Wisbeach (*Mechanics' Institute*).
Wolverhampton (*Library*).
Wolverton (*Institute*).
Woodbridge (*Literary and Mechanics' Institute*).
——— (*Working Men's Hall*).
Worcester (*Railway Literary Institute*).
——— (*Workman's Hall*).
Workington (*Mechanics' Institution*).
York (*Church Institute*).
——— (*Institute of Popular Science, &c.*)
——— (*Railway Library*).

Presentations of portions of the Works, published by order of the Commissioners of Patents, have been made to the following Libraries :—

Armagh (*Town Clerk's Office*).
Aylesbury (*Mechanics' Institution and Literary Society, Kingsbury*).
Birmingham (*Institution of Mechanical Engineers, Newhall Street*).
Boston, Lincolnshire (*Public Offices, Market Place*).
Cambridge (*Free Library, Jesus Lane*).
Chester (*Mechanics' Institute, St. John Street*).
Coalbrookdale (*Literary and Scientific Institution*).
Coventry (*Watchmakers' Association*).
Dublin (*Dublin Library, D'Olier Street*).
Edinburgh (*Horological Society*).
Ennis (*Public Library*).
Gloucester (*Working Men's Institute, Southgate Street*).
Ipswich (*Mechanics' Institute, Tavern Street*).
Kew (*Library of the Royal Gardens*).
Kington, Herefordshire (*Reading Institute*).
Leominster (*Literary Institute*).
London (*House of Lords*).
——— (*House of Commons*).
——— (*Hon. Soc. of Gray's Inn*).
——— („ „ *Inner Temple*).
——— („ „ *Lincoln's Inn*).
——— („ „ *Middle Temple*).
——— (*Aeronautical Society*).
——— (*British Horological Institute*).
——— (*General Post Office*).
——— (*Institution of Civil Engineers*).
——— (*Odontological Society*).
London (*Royal Society*).
——— (*United Service Museum*).
Manchester (*Literary and Philosophical Society, George Street*).
——— (*Mechanics' Institution, David Street*).
Newcastle-upon-Tyne (*North of England Institute of Mining Engineers*).
Oxford (*Bodleian Library*).
Stretford, near Manchester (*Mechanics' Institute*).
Swindon, New (*Mechanics' Institute*).
Tamworth (*Library and Reading Room, George Street*).
Yarmouth, Norfolk (*Public Library South Quay*).

British Colonies and Foreign States.

British Columbia—Mechanics' Institute, Victoria.
——— Public Library, New Westminster.
France—Academy of Science, Paris.
Netherlands—Bibliothèque de l'Ecole Polytechnique de Delft.
Russia—Imperial Technological Institute, St. Petersburg.
Smyrna—Literary and Scientific Institute.
United States—American Institute, New York.
——— American Society of Civil Engineers, New York.
——— Smithsonian Institute, Washington.

PATENT OFFICE MUSEUM, SOUTH KENSINGTON.

This Museum is open to the public daily, free of charge. The hours of admission are as follows :—

Mondays, Tuesdays, and Saturdays, 10 A.M. till 10 P.M.
Wednesdays, Thursdays, and Fridays, from 10 A.M. till 4, 5, or 6 P.M., according to the season.

If any Patentee should be desirous of exhibiting a model of his invention in London, he may avail himself of this Museum, which has been visited since its opening on the 22nd June 1857 by more than 1,780,000 persons. The model will be received either as a gift or loan ; if deposited as a loan, it will be returned on demand. Before sending a model, it is requested that the size and description of it shall first be given to the Superintendent of the Patent Office Museum.

GALLERY OF PORTRAITS OF INVENTORS, DISCOVERERS, AND INTRODUCERS OF USEFUL ARTS.—This Collection, formed by Mr. Woodcroft, and first opened to public view in 1853, is now exhibited in the Patent Office.

Presentations or loans of Portraits, Medallions, Busts, and Statues, in augmentation of the Collection, are solicited. They will be duly acknowledged in the Commissioners of Patents' Journal, and included in the next edition of the Catalogue.

All communications relating to the Patent Office, or to the Museum and Portrait Gallery, to be addressed to B. WOODCROFT, Clerk to the Commissioners of Patents and Superintendent of the Patent Office Museum, at the Patent Office, 25, Southampton Buildings, Chancery Lane, London, W.C.

CLEVELAND
PUBLIC LIBRARY

THIS
OF
ERTY
ARY HAMILTON
608-G789
THIS BOOK IS NO LONGER THE PROPERTY
OF THE CLEVELAND PUBLIC LIBRARY

ABRIDG'TS
ENGLISH
SPEC'NS

24
PT. 2

POTTERY
PART 2

608
G789